Order Lophobranchii

Snout produced, with terminal, toothless mouth. Mouth very small, bounded above by premaxillaries. Gill covers reduced to large, simple plate. Gills tufted, formed of rounded lobes attached to gill rakers. Air bladder simple, without air duct. Muscular system little developed. Skin with bony plates. Pectoral fins with elevated base.

A large group of greatly modified fishes, quite unlike any others and widely divergent from typical spiny rayed forms.

Mem. Bishop Mus., vol. 10, 1928, p. 215 (note).

? Lethrinus sordidus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 298. New Guinea.

1/11 Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-77, p. 121 (copied).

Lethrinus glyphodon Günther, Cat. Fishes Brit. Mus. vol. 1, 1859, p. 462. Louisiades.

Lethrinus glyphodon Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. 350.

? Lethrinus fasciatus (not Valenciennes) Kner, Reise Novara, Fische, 1865, p. 82 (Australia).

Family Syngnathidae

Body elongated, angularly or laterally compressed or rounded, usually slender. Head slender. Snout terminal, long, tube-like, with short toothless jaws at end. Mouth oblique, bordered by small premaxillaries, maxillaries and mandible. Nasal openings 2. Gill opening reduced to small aperture behind upper part of opercle. Branchiostegal 1, terminally devided. Pseudobranchial well developed. Body covered with bony plates, firmly connected and forming bony carapace, arranged regularly in series and forming rings which correspond

with vertebral, except first. Tail long, sometimes prehensile or may have small caudal fin. Male with egg pouch, usually placed on tail below, sometimes on abdomen, often formed of 2 folds of skin meeting on median line. Eggs received into pouch and retained until some time after breeding, then pouch opens to permit young to escape. Dorsal fin rarely absent, single, nearly median, of soft rays only. Anal usually present and opposite dorsal, minute. Pectoral small, or absent. No ventrals.

Small fishes, sometimes entering fresh water and found in all warm seas. All are poor swimmers, moving about in vertical position by undulating movements of the dorsal fin.

(Philippines). 1/m Herre and Montalban, Philippine Journ. Sci., vol. 33, no. 4, Aug. 1927, p. 421, pl. 4, fig. 2 (Banaran and Titanka Islands). 1/m Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 281 (Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 215 (Hawaiian Islands); Proc. Acad. Nat. Sci. Philadelphia, 1929 (1930), p. 609 (Hong Kong).

Lethrinus lentjanus Elera, Cat. Fauna Filipinas, vol. 1, 1895, p. 482 (Luzon, Manila Bay). (Error.)

→ Lethrinus cocosensis Bleeker, Naturk. Tijdschr. Nederland. Indië, vol. 7, 1854, p. 40. Nova Selma, Cocos-Keeling Islands.

1/m Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 459 (compiled). 1/m Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-77, p. 121, pl. (18) 296, fig. 1 (Cocos, Celebes, Halmaheira, New Guinea). 1/m Fowler,

Analysis of Genera

a.' Hyngnathinae. Caudal present.

b.' Dorsal, anal and pectoral present.

c.' Trunk and caudal with longitudinal keels or ~~cristae~~ keel.

d.' Upper trunk and upper caudal keels discontinuous.

e.' Opercle without keel.

f.' Body with trunk little or scarcely swollen.

g.' Caudal small.

h.' No high median crest like keel on snout above.

i.' D. 21 to 25, on 1 + 3 rings; upper snout profile scarcely separated from forehead. Dunckercampus.

i.^{2} D. 42 to 60, on 4 or 5 + 8 or 9 rings; snout distinct from forehead. Coelonotus.

i.^{3} D. 64 to 68, on 11 or 12 + 4 rings; upper snout profile gradually continued in forehead profile. Belonichthys.

h.² Snout with median high keel like ridge; d. 23 to 26.

Histiogamphelus.

g.² Caudal large, half length of long snout; back flattened; d. 34 to 38.

Leptoichthys.

f.² Body with trunk greatly swollen, deep, back very narrow, belly trenchant.

Leptonotus.

e.² Opercle with complete or basal incomplete keel.

j.' Opercular keel rectilinear; dorsal base not elevated.

k.' Trunk rings more numerous than caudal rings; dorsal mostly on trunk; caudal more than half of head.

Doryrhamphus.

k.² Trunk rings equal or less numerous than caudal rings; dorsal mostly on tail; caudal equal to or less than postorbital.

l.' Egg pouch abdominal.

m.¹ Vent postmedian; trunk rings equal or less than tail rings; snout longer than rest of head.

Microphis.

m.² Vent usually premedian; trunk rings equal or less than tail rings; snout short or only slightly longer than rest of head.

Doryichthys.

l.² Egg pouch subcaudal.

m.¹ Lower trunk and caudal rings continuous; median lateral trunk keel and lower caudal keel discontinuous.

o.¹ Upper snout profile evenly continued on forehead; orbits not prominent. Hypnathus.

o.² Snout forms angle with orbital part of head, which prominent.

f.' Eggs small, narrow, incompletely isolated. Erythrichthys.

f.² Eggs large, biserial, in isolated open cells. Bhanotia.

n.² Lower trunks and caudal keels discontinuous; median trunks keels and lower caudal keels continuous; snout not forming angle with orbital part of head. Micrognathus.

j.² Opercular keel convex, bent up towards gill opening, with radial lines; dorsal base elevated; lower trunks and caudal keels discontinuous; median lateral trunks and lower caudal keels continuous.

g.' All edges and ridges of head smooth.

r.' Orbits prominent; snout equals postocular, with median serrated keel. Trachyrhamphus.

r.² Orbits not prominent; snout equals or longer than rest of head, without serrated keel. Yozia.

q.² Edges of rings spinous; dorsal profile of snout and head spinous; orbital part of head strongly prominent and sharply separated from snout. Halicampus.

d.² Upper trunk and upper caudal keels continuous.

s.¹ Egg pouch subcaudal; opercle with or without complete or incomplete longitudinal keel.

t.¹ Vent premedian. Ichthyocampus.

t.² Vent postmedian. Urocampus.

s.² Egg pouch abdominal; opercle with complete longitudinal keel; vent postmedian.

u.¹ Rings 14 to 19 + 18 to 24. Choerichthys.

u.² Rings 13 to 17 + 36 to 47. Festucalex.

c.[2] Body smooth, without keels. Lissocampus.

a.[2] Pectorals absent. Hannocampus.

a.[3] Anal, caudal and pectorals absent.
Enteleurus.

a.[4] Dorsal, anal and pectorals absent.
Penetopteryx.

a.[2] Hippocampinae. Caudal absent, tail usually prehensile.

v.' Nuchal plate not elevated and not connate with head.

w.' Body depressed or subcylindrical.

x.' Snout very slender, twice rest of head; tail filiform, not prehensile. Stigmatopora.

x.[2] Snout rather stout, nearly twice postorbital; tail prehensile.
Syngnathoides.

w.[2] Body compressed, not or scarcely dilated; tail prehensile.

y.' Upper trunk and caudal keels discontinuous. Solegnathus.

y.[2] Upper trunk and caudal keels continuous. Runciatus.

v.' Nuchal plate more or less elevated, crowning back of head and connate with preceding plate.

z.' Longitudinal axis of head and trunk nearly in same plane; prenuchal shield without coronet; numerous cutaneous flaps.

aa.' Snout longer than rest of head. Halichthys.

aa.² Snout less than half of head. Acentronura.

z.² Longitudinal axis of head form right angle with axis of trunk.

bb.' Prenuchal shield surrounded with coronet of spines; cutaneous appendages usually not extensive. Hippocampus.

bb.² Prenuchal shields without coronet; cutaneous flaps long and sometimes very numerous; body deeply compressed.

cc.' Trunk rings without spines; cutaneous flaps few. Phyllopteryx.

cc.² Trunk rings with long spines below; cutaneous flaps very extensive. Phycodurus.

Genus Dunckerocampus Whitley

Dunckerocampus Whitley, Rec. Australian Mus., vol. 19, No. 1, p. 67, August 2, 1933. (Type Syngnathus dactyliophorus Bleeker, orthotypic.)

Acanthognathus (not Mayr 1887 in Hymenoptera) Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 29, p. 228, 1911 (1912). (Type Syngnathus dactyliophorus Bleeker, orthotypic.)

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Body greatly elongate, heptgonal, abdominal keels flattened. Tail rather short, tetragonal. Upper and lower keels of trunk and tail discontinuous. Median trunk keels and lower tail keels continuous. Edge of each body ring ends in spine. Intermedial scutes (scutella) present, also prenuchal and 2 nuchal plates. Most of soft dorsal above caudal rings. Caudal rather large. Anal and pectoral present. Vent

postmedian. Eggs attached to skin of abdomen, in which imbedded, incompletely isolated from each other and uncovered by cutaneous folds or scutal plates.

Indo-Pacific.

Analysis of species

a.' Darks transverse bars alternately present on rings. dactyliophorus.

a.² Darks transverse bar at each articulation of ring besides another darks median transverse bar on each ring.

b.' Rings 17+21; D. 20, on 1+3 rings. multiannulatus.

b.² Rings 19+20; D. 26, on 3+4 rings. pessuliferus.

~~Dunkerocampus~~
~~Acanthognathus~~ dactyliophorus (Bleeker)

Syngnathus dactyliophorus Bleeker, Nat. Tijds. Ned. Indië, vol. 4, p. 506, 1853 (type locality, Batavia at Onrust Island); Verh. Batavia. Genoots. (Trosk.), vol. 25, p. 16, 1853 (Batavia near Onrust Island); Nat. Tijds. Ned. Indië, vol. 8, p. 393, 1855 (Amboina); Act. Soc. Sci. Ind. Néerl., vol. 2, no. 7, p. 9, 1857 (Amboina).

Corythoichthys dactyliophorus Kaup, Cat. Lophobr. Fish Brit. Mus., p. 28, 1856.

Microphis dactyliophorus Bleeker, Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Java; Amboina); Ned. Tijds. Dierk., vol. 2, p. 273, 1865.

Dorypichthys dactylophorus Günther, Cat. Fish. Brit. Mus., vol. 8, p. 186, 1870 (type); Journ. Mus. Godeffroy, vol. 9, pt. 17, p. 433, 1910 (type.; Pelew Island; New Caledonia).

Microphis dactylophorus Duméril, Cat. Lophobr. Fish Brit. Mus., vol. 2, p. 592, 1870 (New Caledonia).

Acanthognathus dactylophorus Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 29, p. 228, 1911 (1912) ( ); vol. 32, p. 41, 1914 (1915) (Java, Amboina, Pelew Islands, Marshalls, New Guinea, New Caledonia).

Acanthognathus dactyliophorus ✓

Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 42, fig. 20, 1922 (Bleeker's material). — Wilhelm Harbor, New Guinea). — Fowler, Mem. Bishop Mus., vol. 10, p. 110, 1928 (compiled).

Microphis dactylophorus Duméril, Cat. Lophobr. Fish Brit. Mus., vol. 2, p. 592, 1870 (New Caledonia).

Acanthognathus dactylophorus Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 29, p. 228, 1911 (1912) ( ); vol. 32, p. 41, 1914 (1915) (Java, Amboina, Pelew Islands, Marshalls, New Guinea, New Caledonia).

Acanthognathus dactyliophorus ✓ Duncker and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 12, pl. 2, fig. 1, 1925 (Friedrich Wilhelm Harbor, New Guinea). — Fowler, Mem. Bishop Mus., vol. 10, p. 110, 1928 (compiled).

Dunker and
Zeitsch. Kunst.
p. 12, pl. 2, fig.
Wilhelm Harbo
Fowler, Trew.

Case 129

Lethrinus microdon Valenciennes

Lethrinus microdon Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 295. Bourn. 1/m Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 198, pl. 25, figs. 1—a (type).

Depth 3 1/8; head 3, upper profile very slightly convex. Snout 2 1/5 in head from snout tip; eye 3 1/2, 1 1/2 in snout, equals suborbital depth; mandible slightly protrudes; maxillary reaches 4/5 to eye, length 2 4/5 in head from snout tip; canines weak (shown as moderate on figure), hind teeth small and pointed; interorbital low, less than eye.

Scales 48 in lateral line (44 on figure; 3 above, 12 below, predorsal shown forward only opposite hind preopercle ridge; no postocular scale.

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Dunckerocampus dactylophorus

Whitley, Rec. Austral. Mus., vol. 19, no. 1, p. 67, August 2, 1933 (reference).

spots of flame gold and large dots of olive at base of each spine; membranes of soft dorsal golden, also pectoral and caudal, rays yellow. Anal and ventral yellow. Length 200 mm.

Savage intends the present species is different from Lethrinus miniatus. Lethrinus waigiensis and Lethrinus olivaceus were identified with Lethrinus miniatus by Bleeker, though Savage, after an examination of the types, found they differed chiefly in smaller scales and less extended snout. Lethrinus waigiensis was based on an example but 175 mm. long and described as brown on the back, silvery below. Snout blackish and body clouded with large blackish markings. Some traces of brown bands on jaws.

Depth 29 1/4 to 31, to vent 17 2/5 to 21 1/4; head 2 3/5 to 2 3/4, 3 7/8 to 4 1/8 to caudal base, width 7 2/5 to 7 2/3 in its length. Snout 1 1/3 to 1 2/5 in head from snout tip; eye 7 3/4 to 9, 5 1/2 to 6 2/5 in snout, greater than interorbital; maxillary 1 1/3 to 1 1/2 in eye; interorbital 1 1/2 to 1 3/5, concave. Opercle without keel, rugose.

Rings 18 or 19 + 19 to 21, caudal section 3/4 to 9/10 of trunk. Upper trunk keel discontinuous with upper caudal keel, both overlapping whole length of dorsal fin; lower trunk keel discontinuous with lower caudal keel; median lateral trunk

keel continuous with lower caudal keel; median ventral trunk keel distinct, discontinuous at vent. In males whole ventral surface of trunk with reticulions of agglutinated eggs of which about 8 series transverse and 68 longitudinally. Ridges of head scarcely serrate or only little so before nostrils. Each ridge of body with spine posteriorly, distinct and protruding.

D. 22 to 26, on 1 + 4 rings, fin height 1 to 1.5 in eye; A. 3 or 4, fin $1\frac{1}{3}$ to $1\frac{3}{4}$ in eye; caudal $1\frac{7}{8}$ to $2\frac{3}{5}$ in total head length, ends in median point behind; pectoral

rays 19 to 21, fin 1 to 1 1/5 in eye.

Pale brown, nearly or quite uniform. On muzzle 6 or 7 blackish brown transverse bars, 1 on interorbital and down through eyes across under side of head, 1 on postocular region, 10 to 12 on trunk mostly as on alternate rings, 12 or 13 on tail. Iris slate or gray, except as crossed by dark band. Iris uniformly pale or light brown.

East Indies, Philippines, Melanesia, Micronesia.

One example. Cebu market. March 22, 1909. Length 98 mm.

18821. Pandanon Island. March 23, 1909. Length 157 mm.

14402. Talisse Island. November 9, 1908. Length 174 mm. [2033.]

13143. Gumindao Island. February 26, 1908. Length 135 mm. [338.]

Dunckerocampus multiannulatus (Regan)

Dorychthys multiannulatus Regan, Rev. Suisse Zool., vol. 11, p. 413, pl. 13, fig. 3, 1903 (type locality, Mauritius).

Acanthognathus multiannulatus Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 42, 1914 (1915) (compiled).

Head 4 1/2 in total. Snout somewhat over 2 times rest of head.

Scutes 38, 21 behind vent: D. 20, over 4 scutes of which 1 over vent; caudal 4 in head.

Scales 52 in lateral line (57 on figure); 16 above, 13 below, predorsal forward opposite hind eye edge; apparently small postocular scale.

D. X, 9, fourth spine 2 1/3 in head, second ray 2 1/2; A. III, 8, third spine 4, second ray 2 2/3; caudal 1 1/5, deeply forked; least depth of caudal peduncle 3; pectoral 1 1/8; ventral 1 1/2).

(Savage.)

Mozambique, Madagascar, Seychelles, East Indies. Valenciennes gives the following coloration:

Olive green on back, head and tail, below more yellow. Lips reddish, also base of preopercle. Cheek rayed by 5 oblique green bands of which 3 upper from eye to lips and other 2 interrupted and undulate. Spinous dorsal yellowish, edged orange and

Rings with narrow border and
at middle with reddish line,
arranged as between each contiguous
acute. Length 120 mm. (Regan.)

Mauritius.

Head

Genus Coelonotus Peters

Coelonotus Peters, ~~Ber. Verhandel. Kon. Preuss.~~ Monatsber. Akad. Wiss. Berlin, p. 465, 1855. (Type Coelonotus argulus Peters, monotypic.)

Hemithylacus Kaup, Cat. Lophobr. Fish Brit. Mus, p. 61, 1856. (Type Syngnathus leiaspis Bleeker, monotypic.)

Body round and very slender in young, adult female much compressed. Head without or with very feeble ridges. Snout short, equals or shorter than postorbital. Opercle without keel or only rudimentary keel at base, with radial grooves or lines. Upper keels alone conspicuous, others rounded, smooth and

inconspicuous. Upper keels of trunk and tail discontinuous, subdorsally close and parallel, unite at hind end of dorsal. Median keels of trunk and lower keels of tail continuous. Intermedial shields (scutella) present, as premuchal and 2 nuchal shields. Dorsal long, with over 40 rays, above at least 12 caudal rays. Anal premedian. Caudal moderate or small. Pectorals present. Tail longer than head and trunk. Eggs rather large, in isolated cells, formed by skin of abdomen and laterally protected by ventrally converging plates formed by lower lateral edges of trunk, posterior ends connected by fold of skin.

Fresh water streams of shores and islands of the Indo Pacific.

Analysis of Species

a'. Snout moderately wide, not broadly expanded; D. 50 to 60.

b'. Opercle with feeble or obsolete keel, at least basally; head less than 3 to vent. nl argus.

b². Opercle without keel; head 3 or more to vent. liaspis.

a². Snout greatly widened or broadened; D. 40 to 45; opercle without head; head 3 or more to vent. platyrhynchus.

Coelonotus argulus Peters

Coelonotus argulus Peters, Monatsb. Akad. Wiss. Berlin, p. 465, 1855 (type locality, streams of St. Johanna); Pluss. Mossambique, vol. 4, p. 106, pl. 20, fig. 4, 1868.

— Martens, Reise Ost Afrika, Declsen, vol. 3, pt. 1, p. 144, 1869 (Johanna).
— Günther, Cat. Fish. Brit. Mus., vol. 8, p. 189, 1870 (compiled). —
Duméril, Hist. Nat. Poiss. vol. 5, p. 106, pl. 20, fig. 4, 1868.

— Boulenger, Cat. Fresh Water Fish. Africa, vol. 3, p. 85, fig. 70 (copied), 1915 (copied).

→ — Nemcker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 56, 1915.
— Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 57, 1922 (compiled).

Coelonotus argulus Peters

Coelonotus argulus Peters, Monatsb. Akad. Wiss. Berlin, p. 465, 1855 (type locality, Streams of St. Johanna); Flussf. Mossambique, vol. 4, p. 106, pl. 20, fig. 4, 1868.

— Martens, Reise Ost Afrika, Decken, vol. 3, pt. 1, p. 144, 1869 (Johanna). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 189, 1870 (compiled). — Duméril, Hist. Nat. Poiss., vol. 2, p. 541, 1870 (compiled). — Bleeker, ~~Hist. Rep. Faune~~ Madagascar, Pollen et Van Dam, p. 75, 1875 (reference). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 56, 1915. — Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 57, 1922 (compiled).

+ Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 217 (copied Günther).

? Pentapus viii Valenciennes, Hist. Nat. Pois., vol. 6, 1830 (September), p. 266. Shark Bay, West Australia.

Maenoides? aurofrenatus Richardson, Icones Piscium, 1843, p. 8, pl. 5, fig. 2. Tale Bay, Australia [probably Tale Head, Port Darwin].

Smaris porosus (not Valenciennes) Richardson, Discov. in Australia, Stokes, vol. 1, 1846, appendix p. 489, pl. ?. King George Sound (Bynoe).

Depth 3⅛; head 3¼. Snout 3⅕ in head; eye 4, 1⅛ in snout; maxillary reaches eye, length 3 in head; interorbital low, entire; suborbital depth ½ in eye.

Scales fine, 72 on figure, of which last 4 on caudal base; 5 above, 16 below, predorsal extend forward nearly to nostrils;

Syngnathus argus (not Richardson 1840) Peters, Ber. Verhandel. Kon. Preuss. Akad. Wiss. Berlin, p. 685, 1852.

Coelonotus argus Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 56, 1914 (1915) (type).

Coelonotus biocellatus Günther, Cat. Fish. Brit. Mus., vol. 8, p. 188, 1870 (type locality, East Indian Archipelago).

≠ Syngnathus muraena (not Kaup) Sauvage, Hist. Nat. Madagascar, Poiss., pl. 50, fig. 4, 1891.

Carl 29 Pentapodus vitta Quoy and Gaimard

Pentapodus vitta Quoy and Gaimard, Voy. Uranie, Zool., December 18, 1824, p. 294, pl. 44, fig. 4. Shark Bay, West Australia.

Pentapus vitta Valenciennes, Hist. Nat. Pois., vol. 6, 1830 (September), p. 264 (type). 1/m

Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 381 (Victoria; Houtman's Abrolhos).

1/m Castelnau, Victoria Office Rec. Philadelphia Exhibition (Res. Fishes Australia), 1875, p. 12.

1/m Günther, Rep. Voy. Challenger, vol. 1, 1880, p. 39 (south of New Guinea N. Lat. 0° 59' E. Long. 139° 42'). 1/m Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 384 (West and north coasts Australia). 1/m

Waite, Records Australian Mus., vol. 4, 1902, p. 185 (Mandurah, West Australia). 1/m Mc Culloch, Biolog. Res. Endeavour, vol. 11, pt. 3, July 3, 1914, p. 106, pl. 21 (type; Fremantle; Mandurah, between Geraldton and Cape Naturaliste).

Depth 33 to 38; head $7\frac{3}{5}$ to $7\frac{2}{3}$, width 4 to $4\frac{1}{3}$. Snout $2\frac{1}{3}$ to $2\frac{2}{5}$ in head from snout tip; eye $6\frac{1}{4}$ to $6\frac{1}{3}$, $2\frac{3}{4}$ to $2\frac{7}{8}$ in snout, greater than interorbital; maxillary $1\frac{1}{5}$ to $1\frac{1}{4}$ in eye; interorbital $1\frac{1}{8}$ to $1\frac{1}{5}$, deeply concave. Operele with very feeble or obsolete longitudinal keel, horizontal, only evident with lens.

Rings 16 to 18 + 31 to 33, combined head and trunk $\frac{3}{4}$ of caudal section. Upper trunk keel discontinuous with upper caudal keel, overlap 2 trunk and 8 caudal rings; lower trunk keel discontinuous with lower caudal keel; median lateral trunk keel continuous with lower caudal keel; median ventral trunk keel distinct, discontinuous at vent.

Ridges of snout, one each side above entire. Top of head and body keels all smooth.

D. 55 to 57, fin height 4 to 5 in total head length; A. length $1\frac{1}{4}$ in eye; caudal $2\frac{1}{5}$ to $2\frac{2}{5}$ in total head length; pectoral $4\frac{1}{5}$ to $4\frac{1}{4}$, rays 15 to 17.

Brown above, whitish below. Dark brown streaks along side of snout and over postocular, then along side of trunk close above median lateral keel. Opercle below and prepectoral region with some rather large dull brownish spots. Alternating rings of tail dark brown. Base of dorsal dark brown, fin pale brown. Caudal dusky terminally.

East Africa, Mozambique, Madagascar, East Indies and

the Philippines.

The figure of Syngnathus muraena by Vauvage seems to represent this species. It shows: head 3 1/2 to vent, 9 in total; rings 17 + 37; D. on 3 + 8 rings; snout 2 1/2 in head from snout tip; eye 5, 2 in snout; head and trunk 1 3/5 in tail to caudal base; opercle with distinct, complete, horizontal keel.

One example. Calugan River, three miles from mouth near Palawan Bay, Mindoro. December 11, 1908. Length 96 mm.

One example. Estero, Sablayan Bay, Mindoro. December 13, 1908. Length 98 mm.

Two examples. Panabutan Bay, Mindanao. ~~December 12, 1908. Length 100 mm.~~ February 5, 1908. Length 95 to 99 mm.

One example. Sablayan Bay, Mindoro. December 12, 1908. Length 100 mm.

Coelonotus leiaspis (Bleeker)

Syngnathus leiaspis Bleeker, Verh. Batavia. Genoot. (Trosh.), vol. 25, p. 20, 1853 (type locality, Batavia); Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Java).

Syngnathus leiaspis Duméril, Hist. Nat. Poiss., vol. 2, p. 572, 1870 (compiled).

Hemithylacus leiaspis Kaup, Cat. Lophobr. Fish Brit. Mus., p. 61, 1856 (type locality, Java; Madagascar). — Duméril, Hist. Nat. Poiss., vol. 2, p. 599, 1870 (Madagascar). — Sauvage, Hist. Nat. Madagascar, Poiss., p. 507, pl. 50, fig. 5, 1891 (type).

Hemithylacus (Syngnathus leiaspis Guichenot, Mém. Soc. Sci. Chérbourg, ser. 2, vol. 2, p. 148, 1866 (Madagascar).

Coelonotus leiaspis Günther, Cat. Fish. Brit. Mus., vol. 8, p. 188, 1870 (type). — Jordan and Richardson, Bull. Bur. Fisher., vol. 27, p. 246, 1907 (1908) (Mindoro; Sibuyan). — Beaufort, Bijd. Dierk. Amsterdam, vol. 19, p. 103 (not description), fig. 3, 1913 (Rabaiai,

— Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 57, fig. 24, 1922 (Batavia; Borneo; Wai Meha, Taliabu; Buru; Rabai River, Waigiu; Klipang, North New Guinea);

Mus., vol. 10, p. 111, 1928 (compiled); vol. 11, no. 5, p. 323, fig. 1, 1931 (Raiatea).

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Hemithylacus (Syngnathus) leiaspis Guichenot, Mém. Soc. Sci. Chérbourg, ser. 2, vol. 2, p. 148, 1866 (Madagascar).

Coelonotus leiaspis Günther, Cat. Fish. Brit. Mus., vol. 8, p. 188, 1870 (type). — Jordan and Richardson, Bull. Bur. Fisher., vol. 27, p. 246, 1907 (1908) (Mindoro; Sibuyan). — Beaufort, Bijd. Dierk. Amsterdam, vol. 19, p. 103 (not description), fig. 3, 1913 (Rabiai, Waigeu). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 57, 1914 (1915) (Madagascar, Java, Celebes, Buru, Philippines, Japan?). — Fowler, Mem. Bishop Mus., vol. 10, p. 111, 1928 (compiled); vol. 11, no. 5, p. 323, fig. 1, 1931 (Raiatea).

— Boulenger, Cat. Fresh Water Fishes Africa, vol. 3, p. 85, fig. 71, 1915 (Madagascar).

ventrals and caudal more or less

vermilion. Anal and pectorals

pale orange.

Analysis of the species

a.' Pentapodus. Predorsal scales extend forward in interorbital.

b.' No oblique dark bar across pectoral base.

c.' Median lateral band from snout to caudal base.

d.' Scales very small, about 70. vitta.

d.² Larger, 45 to 50.

e.' Median lateral golden band; dorsals edged golden; caudal lobes end in long points, not filaments. maeruru.

e.² Median lateral dark band, with silvery bordering line above and below.

f.' Blue dots along lateral line; spinous dorsal edged golden. kekemuthi.

f.² Two brilliant streaks on back, one leaden; belly with oblique streaks of silvery dots. Only 1 specimen examined. peronii.

c.² Two postocular silvery longitudinal lines far as depressed pectoral; oblique dark streaks on back; 2 gray lines on back above lateral line.

Syngnathus budi Bleeker, Act. Soc. Sci. Ind. Néerl., vol. 1, no. 3, p. (6) 77, 1856 (type locality, Manado); vol. 3, no. 4, p. 5, 1857–58 (Tanawangko); Nat. Tijds. Ned. Indië, vol. 16, p. 209, 1858 (Batjan); Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Celebes). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 176, 1870 (type). — Duméril, Hist. Nat. Poiss., vol. 2, p. 572, 1870 (compiled). — Weber, Nova Guinea, vol. 5, pt. 2, p. 228, 1908 (Klipong River, northern New Guinea).

Ventral I, 5, spine compressed, expanded, nearly long as soft rays. Pectoral rays 17, fan very long. Rose color, fins paler. Length 290 mm. (Valenciennes.)

Cuv 29 Pentapodus unicolor (Valenciennes)
Pentapus unicolor Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 263. No locality. (Stadhouder's collection.) 1/27 Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 382 (copied).
? Bodianus fischerii Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 281, 493. No locality. "collection zoologique cedée par la Hollande à la France."

Resembles Pentapodus nitiatus in general form. Scales smaller or less in lateral line and very finely ciliated. Preopercle limb naked. Teeth fine, same of lower laterals. Number of rays similar. No traces of bands on body. Length 188 mm. (Valenciennes.)

Typlus goudotii (Bibron) Duméril, Hist. Nat. Poiss., vol. 2, p. 572, 1870 (type locality, Madagascar) (name in text).

Syngnathus micrognathus (Kuhl and Van Hasselt) Duméril, Hist. Nat. Poiss., vol. 2, p. 599, 1870 (type locality, Java) (name in text).

Syngnathus compressus (Kuhl and Van Hasselt) Duméril, Hist. Nat. Poiss., vol. 2, p. 599, 1870 (type locality, Java) (name in text).

Coelonotus vaillanti Guillerat, Bull. Soc. Philomath. Paris, ser. 7, vol. 4, p. 176, 1879 (type locality, Madagascar). — Sauvage, Hist. Nat. Madagascar, Poiss., p. 508, pl. 49 B, fig. 6, 1891 (type).

Cuv[r] & V. Pentapodus cyanotaeniatus (Richardson)

Pt. ~~Pt.~~ maenoides? cyano-taeniatus Richardson,

Icones Piscium, 1843, p. 8, pl. 5, fig.

Depuch Islands, North West Australia.

Pt. (I have not seen the original account

of this.) 10 x 4

Cuv[r] & V. Pentapodus multidens (Valenciennes)

Dentex multidens Valenciennes, Hist.

Nat. Poiss., vol. 6, 1830, p. 238. Red Sea.

1/m Gunther, Cat. Fishes Brit. Mus., vol. 1,

1859, p. 373 (compiled).

Dentex dispar Valenciennes, Hist. Nat. Poiss.

op. cit., vol. 6, 1830, p. 238. Lokaja. (name only, in text.)

Numerous strong curved canines, arm

edges of both jaws, 8 or 10 in outer

series of each, behind very narrow row

of small obtuse teeth. Suborbital shallow,

long. Scales smooth, base not striate.

D. X, I, 11, spines moderate. A. III, 9.

Siphostoma yoshii Snyder, Proc. U. S. Nat. Mus., vol. 36, p. 597, 1909 (type locality, Tanegashima).

Syngnathus yoshii Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 407, pl. 51, fig. 3, 1912 (Okinawa). —— Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, p. 95, 1913 (reference).

Scales moderate, ctenoid, 35 to 65 on lateral line. Head scaly, except snout, preorbitals and suborbitals. Preopercle more or less naked, more than 3 rows on cheek. Lateral line with tubes bifid, extend over entire exposed surface of scale. Dorsal spines 10, rays 8 to 10, spinous part much longer than soft fin, one or both lobes may end in filaments. Anal like dorsal, spines 3, rays 7 to 10, and third spine longest. Pectoral short, pointed, rays 14 to 16. Ventral inserted behind pectoral base, accessory scale present.

Fishes of small size in the warmer Indo-Pacific. They differ from Synagris chiefly in each of the outer front canines usually flaring outward. The following are those imperfectly described doubtful species:

Body more or less compressed, tail much longer than head and trunk. quadrilateral, 1, Head 9 to 10 or more, 3 or more in trunk. Snout equals postorbital, somewhat concave, with feeble lateral ridges; eye 5 to 6 in head; opercle without keel, with or without feeble radial furrows.

Rings 17 or 18 + 32 to 34, lateral shields with transverse striae, interrupted by broad median part which corrugated as also intermedial shields.

D. 51 to 60, lower than body on 4 or 5 trunk rings and 8 to 9 caudal height, 1, 1; A. 4; caudal 8 or 9, rounded, long as postorbital; pectoral 17 to 19.

Above brown, below ~~brownish~~. yellowish. dark brown stripe along mid eye edge along trunk sides. Anal, 2nd, 4th, 5th, 7th, 10th, 13th, 15th, 18th, 22nd and 26th caudal rings speckled with brown on

ventral side, giving ring-
tortoise-shell like appearance,
or tail with brown edged
ocelli, center of which formed
by whitish intermedial shields.
Length 159 mm.

(Weber and Beaufort.)

Madagascar, East Indies,
Philippines, Japan. Fresh and
brackish water, in rivers and
estuaries.

Zebra 48
Zonata 49
Zonophaea 49
hidna, Gymnothorax 52
hidnidae 6, 48
hinorhinidae 23
hinorhinus bruens 23
lipticus, Pomacentrus 314
tenes, Coryphaenoides 86
Macrourus 86
Tetrapterus 136
hinocephalus, Gobius 399
Kurtus 399
Paragobiodon ?, 399
Ruppellii 399
dentula, Equula 153
Raja 26
entulus, Caranx 150
Leiognathus 153
Halarias 9, 437
mondsoni, Enchelycorus 443
n drachtensis, Alberina 119
regius, Vespo[illegible] 96
hrenbergii, Lutianus 199

R

Coelonotus platyrhynchus (Duméril)

Syngnathus platyrhynchus Duméril, Hist. Nat. Poiss., vol. 2, p. 571, 1870 (type locality, Nouhahiva, Marquesas Islands).

Coelonotus platyrrhynchus Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 56, 1914 (1915) (New Pommerania). — Duncker and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 15, pl. 2, fig. 3, 1925 (Zoller Bay, New Pommerania).

Coelonotus platyrhynchus Fowler, Mem. Bishop Mus., vol. 10, p. 111, 1928 (compiled); Proc. U. S. Nat. Mus., vol. 80, art. 6, p. 7, fig. 2, 1932 (Ua Huka, Marquesan Islands).

Depth 2 3 1/2 to 2 4 1/4, head 8 to 9, width 3 1/2 to 3 3/5. Snout 2 1/5 to 2 1/4 in head from snout tip, width 1 3/5 to 1 2/3 its length, eye 5 to 5 1/5 in head from snout tip, 2 1/5 to 2 1/4 in snout, little greater than interorbital; mouth with very short cleft, broad, superior terminally; interorbital 5 3/4 to 6 in head from snout tip, nearly level. Gill opening small.

Rings 17 or 18 + 35 to 37. Upper trunk and caudal keels continuous and joined with auxiliary short keel starting on last trunk ring superiorly and finally approximating opposite base of last dorsal ray; median lateral trunk keel slopes down on last 3 trunk rings or opposite front of dorsal and continues on tail as lower

caudal keel; lower trunk keel approximates slightly with its fellow at vent to buttress abdominal brood organ, which is well marked in male.

D. 40 to 45, -on 4 trunk and 7 caudal rings, higher than body depth below or fin height. $2\frac{1}{5}$ in head; caudal fan like, $1\frac{3}{5}$; pectoral 3 to 4, rays 15 or 16; anal very small, about half eye.

Pale brow, below to uniform whitish. Iris gray, evidently silvery in life. At junction of each trunk ring above and below median lateral 1. trunk keel small black ocellus, thus forming 2 lateral rows. Caudal brownish, other fins transparent. Black spot variable, sometimes several before and behind pectoral base.

Melanesia, Polynesia.

One example. Limbe Strait, Celebes, Dutch East Indies. November 9, 1909. Length 85 mm.

U. S. N. Mus., 20.

Ua Huka, Marquesas Islands. Pinchot Expedition. 1929. Length 105 to 108 mm. Three examples.

Genus Belonichthys Peters.

Belonichthys Peters, Naturw. Reise Mozambique, Zool., pt. 4, p. 109, 1868. (Type, Xyngnathus fluviatilis Peters, Belonichthys monotypic.)

Body feebly heptagonal, as all keels smooth and rounded. Edges on head low, smooth. Snout short, equals postorbital. Operele without keel, with feeble, radiating furrows. Upper keels of trunk and tail discontinuous, also lower keels of trunk and tail. Intermedial shields (scutella) present as also prenuchal and 2 nuchal shields. Dorsal long, rays over 60, over 15 or 16 rings of which 11 or 12 belong to trunk. Caudal

well developed. Pectoral present. Anal - premedian or median. Tail equals or longer than head and trunk. Eggs in isolated cells, formed by skin of abdomen and covered by ventrally converging plates, which belong to lower lateral edges of trunk.

One species.

Belonichthys fluviatilis (Peters)
Xyngnathus fluviatilis Peters,
Monatsb. Akad. Wiss. Berlin, p.
685, 1852 (type locality, Zambesi)
(not consulted).

Belonichthys fluviatilis Duncker,
Mitteil. Nat. Hist. Mus. Hamburg,
vol. 32, p. 58, 1914 (1915) (Zambesi,
Tette). — Weber and Beaufort,
Fish. Indo Austral. Archip.,
vol. 4, p. 59, fig. 25, 1922 (Kajeli,
Buru, fresh water).

7610. Mansalay, Mindoro. June 4, 1908. Length 195 mm.

15965. Masbate Reef. April 20, 1908. Length 190 mm.

11209. Matnog Bay. May 31, 1909. Length 218 mm.

6231. Medio Island, Galera Bay, Mindoro June 9, 1908. Length 287 mm.

8229. Murcielagos Bay, Mindanao. August 20, 1909. Length 195 mm.

4680, 13993. Naugbu, Luzon. January 16, 1908. Length 158 & 180 mm.

6531. Off Daet. June 15, 1909. Length 175 mm.

15166. Pagapas Bay. February 20, 1909. Length 198 mm.

1 example. Philippines. Length 233 mm.

5893. Polloc, Mindanao. May 22, 1908. Length 227 mm.

Syngnathus zambezensis Peters, Monatsb. Akad. Wiss. Berlin, p. 465, 1855 (type locality, Tette, Zambesi).

Belonichthys (Syngnathus) zambezensis Peters, Mossambique Ichthyol. vol. 4, p. 109, pl. 20, fig. 5, 1868; Sitz. Ber. Gesell. Naturf. Fr. Berlin, p. 108, 1880.

Belonichthys zambezensis Martens, Reise Ost Afrika, Decker, vol. 3, pt. 1, p. 144, 1869 (Zambesi at Tetta and Molumbo Bay). — Duméril, Hist. Nat. Poiss., vol. 2, p. 587, 1870 (Zanzibar). — Boulenger, Cat. Fresh Water Fish. Africa, vol. 3, p. 82, fig. 68 (copied), 1915 (compiled).

of both species.

Lethrinus abbreviatus is based on a drawing 188 mm. long. Back elevated. Depth nearly 1/3 length. Blue green, crossed by 10 to 12 regular brown bands.

6516, 8142, 8167, 8174, 9257, 17746, 17747. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 185 to 280 mm. (8167.) Side with 5+ reddish longitudinal bands, first above lateral line, second immediately below its front portion but crosses below soft dorsal, third from opercle point and crosses on middle of caudal peduncle, fourth from behind upper pectoral base to just below middle of caudal peduncle, fifth backward from lower pectoral base to anal axil. Snout and top of head smoky olivaceous, cheeks lighter;

Syngnathus mento Bleeker, Act. Soc. Sci. Ind. Néerl. (Batavia), vol. 1, no. 3, p. (6) 75, 1856 (type locality, Manado); vol. 8 (Sumatra), p. 72, 1859 (Celebes). — Duméril, Hist. Nat. Poiss., vol. 2, p. 571, 1870 (compiled).

Doryichthys mento Günther, Cat. Fish. Brit. Mus., vol. 8, p. 181, 1870 (Manado).

Hemithylacus rocaberti Duméril, Hist. Nat. Poiss., vol. 2, p. 600, 1870 (type locality, Manila).

above the lateral line often varied 5 or 6 to the spinous dorsal, though 5 is the more frequent. I have also thought Lethrinus erythropterus Valenciennes a synonym, as the brief notice of its coloration suggests this. My largest example was 462 mm. long.

Lethrinus mahsena is often with difficulty distinguished from Lethrinus hypselopterus, as preserved examples frequently have the characters little differentiated. However Lethrinus mahsena usually has a more abrupt front profile to the head, so that the jaws are less protruded; also the upper profile of the snout is usually much less concave, while in Lethrinus hypselopterus the snout is often quite protruded anteriorly in comparison. Great variation occurs in the eyes

Depth 20 1/4, to vent 10; head 3 1/10, to caudal base 6 1/4, width 3 2/3. Snout 2 2/3 in head from snout tip; eye 6 1/8, 2 1/3 in snout, greater than interorbital; maxillary ~~reaches~~ 1 1/4 in eye; interorbital anteriorly 1 1/5, nearly level; opercle without keel, with fine radiating striae.

Rays 19+25, combined head and trunk very slightly less than tail. Upper trunk keel discontinuous with upper caudal keel, both overlapping whole length of whole dorsal; lower trunk keel and lower caudal keel discontinuous;

1 example. Port Banalacan, Length 37 mm. Marinduque Island. February 23, 1909.

1 example. Romblon Reef. March 26, 1908. Length 32 mm.

1 example. Tabaon Inlet, Rayay Gulf, Luzon. March 10, 1909. Length 36 mm.

median lateral trunk keel continuous with lower caudal keel.

D. 63, fin height about equals eye 1/7; A. 4, length 1 1/3 in eye; caudal 4 in total head, convex behind; pectoral rays 18, fin 4 in total head. (on 12+5 rays)

Brown, under surface of head, breast and belly paler to whitish. Dark brown band from maxillary to eye, through eye and back along upper edge of opercle to gill opening. Along side of back 5 dark longitudinal lines. Iris slate gray. Dorsal pale brown, with 2 dark longitudinal streaks. Caudal dark brown. Other fins

14510 [557]. Biri Channel, Balicuatro Island, east coast of Luzon. June 2, 1909. Length 83 mm. Nearly uniform scarlet vermilion, back somewhat dusky from pale olivaceous submarginal bar on each scale. Fins also bright scarlet vermilion.

548. Catainan Bay, Masbate Island. April 18, 1908. Length 74 mm. Scarlet vermilion, scales olivaceous dusky submarginally on back. Iris dark umber. Fins uniform scarlet vermilion, except caudal which slightly dusky at tip.

20440. Grande Island Reef. June 8, 1908. Length 36 mm. 1 example. Murcielagos Bay, Mindanao.

August 21, 1909. Length 66 mm.

5313. Jolo. March 6, 1908. Length 50 mm.

Sale.

Mozambique, East Africa,
Madagascar, East Indies,
Philippines.

One example. Hanjaan River, Mindoro.
June 5, 1908. Length 93 mms.

Neale says "This species seems to differ in several respects from A. erythermus to which it is most nearly related". Just what A. erythermus is, unless Upton ~~erythermus~~ Snyder is intended, we do not know.

Genus Histiogamphelus Mc Culloch

Histiogamphelus Mc Culloch, Austral. Zoologist, vol. 1, p. 30, 1914. (Type Histiogamphelus briggsi Mc Culloch, orthotypic.)

High, elevated median ridge on upper surface of short snout. No ridge on opercle. Tail longer than head and body, quadrangular, with well developed caudal fin. Upper trunk keel not continuous with upper caudal keel, which overlaps and not joining median lateral trunk keel. Lower trunk and caudal keels continuous. Dorsal above vent, base elevated above back. Anal minute. Pectorals large..

1061a

Analysis of Species

a.' D. 23 or 25, on 5 + 2 rings. briggsii.

b.' Rings 22 + 36.

b.² Rings 18 + 27. cristatus.

a.² D. 32 or 33, on 1 to 3 + 7 or 8 rings; rings 25 or 26 + 44. rostratus.

Histiogamphelus briggsi Mc Culloch

Histiogamphelus briggsi Mc Culloch, Australian Zoologist, vol. 1, pt. 1, p. 30, fig. 4, June 13, 1914 (type locality, Thouin or Wineglass Bay, Tasmania, in 11 fathoms). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 91, 1914 (1915) (compiled). — Mc Culloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 92, June 29, 1929 (reference).

Serranus fario (Thunberg).

Perca fario Thunberg, Kon. Vet. Acad. Nya Handl., vol. 14, 1793, p. 296, pl. 9. Japan.

Holocentrus fario Schneider, Syst. Ichth. Bloch, 1801, p. 323 (on Thunberg).

Epinephelus fario Jordan and Richardson, Proc. U. S. Nat. Mus., vol. 37, 1910, p. 451, fig. 9 (Wakamoura; Nagasaki). — Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 413 (Misaki). — Tanaka, Fig. Illustr. Descr. Fishes Japan, vol. 38, September 1, 1917, p. 726, pl. 162, fig. 451 (Taiki).

{Izuka and Matsumura, Cat. Zool. Spec. Tokyo Mus., 1920, p. 153 (Kagoshima).

depth 20 1/4; head 8 2/3, 4 1/4 to vent. Tail little longer than head and trunk, which much deeper than wide. Snout 2 1/10 in head, depth 1 2/3 its length, high upper keel thin, flexible; low smooth keel defines lower snout edge either side; eye 5 1/4 in head, 2 1/2 in snout; nostrils close together near eye, anterior tubular; top of head and nape with very low ridge, lost on first body ring; opercle with fine radiating striae.

Rings 22 + 36; 7 distinct smooth ~~ridges~~ keels, abdominal very prominent; upper trunk keel ends at hind dorsal base; median lateral keel reaches last trunk ~~to~~ ring, ends beneath front ends of upper

5947. Hong Kong market. August 13, 1908. Length 208 mm.

6854. Kowloon market. October 22, 1909. Length 169 mm.

22551 U.S.N.M. Kiwa, Japan. Japanese Government. Length 290 mm.

26260 U.S.N.M. Japan. Prof. E. S. Morse. Length 275 mm.

53532 U.S.N.M. Tanagashima, Japan. Anderson. Length 23 to 67 mm. 13 examples.

53539 U.S.N.M. Wayanoura, Yakushima, Japan. Anderson. Length 33 to 53 mm. 6 examples.

59733 U.S.N.M. Matsushima Bay, Japan. Dr. H. M. Smith. Length 138 mm.

62337 U.S.N.M. Misaki, Japan. Jordan and Snyder. Length 50 to 133 mm. 13 examples.

71007 U.S.N.M. Misaki, Sagami, Japan. Albatross Collection 1906. Length 36 to 71 mm. 14 examples.

caudal edges; lower trunk and caudal keels continuous.

D. 23,-on 5 trunk and 2 caudal rings; A. minute; caudal rays 10; pectoral rays 13.

Rich orange brown, with numerous, dark edged blue ocelli. Length 235 mm. (McCulloch.)

Tasmania.

first ray 1 4/5 to 2; caudal 1 to 1 1/8 (to 3 in combined head and body to caudal base); least depth of caudal peduncle 2 1/10 to 2 2/3 in head; pectoral 1 1/10 to 1 2/5; ventral 1 1/5 to 1 1/2.

Largely uniform dark umber, under surface of head and belly little lighter. Base of each scale on head with slightly darker spot, thus forming longitudinal rows of dark spots. Iris brown to slate. Vertical fins dark like back, basal portions paler in young. Paired fins brown. Pectoral with dark line from origin obliquely marking base. Ventral with front surface pale or grayish and inner surfaces dusky brown.

China and Japan. Reported from the Philippines by Elera though no materials from there in our collections.

Histiogamphelus cristatus (Macleay)

Leptoichthys cristatus Macleay, Proc. Linn. Soc. New South Wales, vol. 6, pt. 2, p. 296, September 12, 1882 (type locality, Western Australia). — Duncker, Fauna

* Leptoichthys (Doryrhamphus) cristatus

Hartmeyer, vol. 2, a pt. 1, p. 254, 1909 (compiled).

Histiogamphelus cristatus McCulloch, Australian Zoologist, vol. 1, pt. 1, p. 31, 1914 (type). — Deincker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 92, 1914 (1916) (compiled). — McCulloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 92, June 29, 1929 (reference).

1065

Histiogamphelus cristatus (Macleay)

Leptoichthys cristatus Macleay, Proc. Linn. Soc. New South Wales, vol. 6, pt. 2, p. 296, September 12, 1882 (type locality, Western Australia). — Duncker, Fauna Südwest Austral., Michaelsen and Hartmeyer, vol. 2, pt. 1, p. 234, 1909 (compiled).

Histiogamphelus cristatus McCulloch, Australian Zoologist, vol. 1, pt. 1, p. 31, 1914 (type). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 92, 1914 (1916) (compiled). — McCulloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 92, June 29, 1929 (reference).

~~M. picea De Haan~~

p. 276, 1882 (type locality, Australia). — √Duncker, Südwest Austral.; Micha Hartmeyer,

7759 and 7760. Manila market. June 17, 1908. Length 157 to 172 mm.

19423. Vorsog on market. March 12, 1909. Length 128 mm.

4566, 21536, 21537. Subic Bay. January 7, 1908. Length 23 to 95 mm.

7819. Ulugan Bay, near mouth of Bakeli River, Palawan. December 28, 1908. Length 193 mm.

5062. Sandakan, Borneo. February 29, 1908. Length 235 mm.

20633. Kowloon market, China. September 26, 1908. Length 84 mm.

Body compressed, twice high as wide; head compressed before eye into sharp high ridge. Tail longer than combined head and trunk. Eye large, nearly median in head; mouth opens upward, almost vertical, beneath with prominent ridge; opercle covered with radiating striae.

Rings 18+27; body with 7 well marked keels, 2 dorsal, one lateral each side, 3 ventral; lower caudal keels continuous with lower trunk keels, upper caudal keels pass trunk keels by one ring in different plane.

D. 24, on 5 trunks and 2 caudal rings; caudal elongate, pointed; long as last 5 caudal rings; pectoral broad, short. Uniform dark reddish brown. Length 115 mm. (Macleay.)

Western Australia.

eye, hind one 2, interorbital $2\frac{1}{3}$ to $2\frac{1}{2}$ in head from snout tip, low, broadly convex; suborbitals cover cheek. Gill rakers 1+6, low, short points, $\frac{1}{3}$ of gill filaments, which $\frac{1}{2}$ of eye. Pharyngeal teeth 2, 3, 4 — 5, 3, 2, hooked, with slight or narrow entire grinding surfaces.

Scales 32 or 33 in lateral line to caudal base and 2 more on latter; 7 above, 1 below to ventral, 2 below to anal origin; 13 to 15 predorsal. Scales with 15 to 17 apical radiating striae; circuli very fine.

D. III, 11, I, first branched ray $\frac{1}{4}$ to $1\frac{2}{5}$ in total head length; A. III, 14, I, first branched ray $1\frac{2}{5}$; least depth of caudal peduncle $7\frac{1}{2}$. Pectoral $1\frac{1}{5}$ to $1\frac{1}{4}$; ventral rays I, 11

Histiogamphelus rostratus Waite and Hale

Histiogamphelus rostratus Waite and Hale, Rec. South Australian Mus., vol. 1, no. 4, p. 303, fig. 44, January 29, 1921 (type locality, Spencer Gulf; Whidbey Island; Kangaroo Island).
— McCulloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 92, June 29, 1929 (reference).
— Waite, Rec. South Austral. Mus., vol. 2, no. 1, p. 54, fig. 82, April 23, 1921 (reference).

Syngnathus semifasciatus (not Günther) Zeitz, Trans. Roy. Soc. South Australia, vol. 22, p. 298, 1908.

Doryichthys heteroxoma (not Bleeker) Zeitz, Trans. Roy. Soc. South Australia, vol. 22, p. 299, 1908.

Persian Gulf, India, Ceylon, East Indies, Philippines. The nominal Epinephelus albimaculatus Veale is evidently simply a color variant, described as brownish tinged with green, about 30 rather large scattered round yellow spots on head and fins slightly darker. The type was 280 mm. This name is preoccupied in Serranus.

7952. Batangas market. June 7, 1908. Length 195 mm.

21918. Cebu market. September 1, 1909. Length 77 mm. [1880.]

5263. Dagupan, Luzon Island. March 19, 1908. Length 105 mm.

5703 ~~[illegible]~~ Manila market. May 4, 1908. Length 294 mm.

12107. Manila market. June 11, 1908. Length 197 mm.

Head 6 1/3, 1 9/10 in trunk; trunk 1 2/3 in tail, 3 1/5 in total. Snout twice rest of head, deep, much compressed, front part deepest and more than twice deep as wide, with high, elevated, knife like, median crest bifurcating to form supraorbital ridges; eye 10 9/10 in head, 7 2/5 in snout; space between forks and front eye edges equal to eye; occipital and nuchal ridges low; sides of snout and opercle with radiating striae.

Rings 25, or 26 + 44. Keels well defined, very prominent on tail posteriorly; upper ridge continued on sixth caudal scute; median lateral trunk ridge ends on last body scute, below origin of upper caudal ridge, which begins on side and reaches dorsal angle at eighth caudal

acute; lower ridge continuous. Ventral surface little wider than dorsal.

D. 32 or 33, on 1 to 3 trunk and 7 or 8 caudal rings; A. 2; caudal rays 10; pectoral 12.

Head brown with white markings edged with dark brown, more pronounced near eye. Body and tail brown, darker above with about 16 light cross bars between nape and caudal fin. Lower half of lateral surfaces with fine white mottlings. Ventral surface of trunk with large white markings, that of tail without markings, edges of scutes darker. Caudal black, tipped white. Length 283 mm. (Waite and Hale.)

South Australia.

Genus Leptoichthys Kaup

Leptoichthys Kaup, Cat. Lophobr. Fish Brit. Mus., p. 51, 1856. (Type Leptoichthys fistularius Kaup, monotypic.)

Body greatly elongated, hexagonal, with flat back and belly without intermediate scales. Snout very long, slender, much compressed, extended in same plane as body axis. Gill opening rather large. Caudal fin long.

Leptoichthys fistularius Kaup

Leptoichthys fistularius Kaup, Archiv Naturges., vol. 19, pt. 1, p. 232, 1853 (type locality, King George's Sound); Cat. Lophobr. Fish Brit. Mus., p. 52, 1856 (type). — Duméril, Hist. Nat. Poiss., vol. 2, p. 580, 1870 (type). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 187, 1870 (copied). — Castelnau, Proc. Zool. Acclimat. Soc. Victoria, vol. 1, p. 243, 1872 (St. Vincent Gulf, South Australia); vol. 2, p. 77, 1872 (South Australia). Archiv Naturges., vol. 38, pt. 1, p. 44, 1872 (Port Phillip); Klunzinger, Sitzs. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, p. 420, 1879 (1880). (Port Phillip). — Macleay, Proc. Linn. Soc. New South Wales, vol. 6, pt. 1, p. 295, 1882 (compiled). — Duncker,

. Serranus flavocaeruleus (Lacépède).

Holocentrus flavo-caeruleus Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 331, 367. Mauritius.

Serranus flavocaeruleus Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 297 (Mauritius). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 145 (Mauritius and Ceylon). — Playfair, Fishes of Zanzibar, 1866, p. 10 (Zanzibar). — Day, Fishes of India, pt. 1, 1875, p. 15, pl. 3, fig. 1 (Andamans); Fauna Brit. India, vol. 1, 1889, p. 448.

Serranus flavocoeruleus Peters, Arch. Naturg., 1855, p. 236 (Mozambique).

Epinephelus flavocaeruleus Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 435 (Mauritius). — Günther, Trans. Roy. Soc. London, vol. 168, 1879, p. 470 (Rodrigues). — Sauvage, Hist. Nat. Madagascar, Poiss.,

Fauna Sudw. Austral. Michaelsen and Hartmeyer, vol. 2 pt. 1, p. 234, 1909, (King George's Sound, Port Philip, Adelaide). Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 40, 1914 (1915) (South Australia, Port Philip, King George's Sound). — Waite and Hale, Rec. South Austral. Mus., vol. 1, no. 4, p. 307, fig. 47, January 29, 1921 (Spencer Gulf, St. Vincent Gulf).

Typhlus fasitularius (Bibron) Kaup, ~~Cat. Lophobranch. Fish Brit. Mus.~~, Archiv Naturges., vol. 19, pt. 1, p. 233, 1853 ~~p. 52, 1856~~ (name in synonymy).

Leptoichthys castelnaui Macleay, Proc. Linn. Soc. New South Wales, vol. 6, pt. 2, p. 295, September 12, 1881 ~~1882~~ (~~type locality, South Australia~~); vol. , p. 234, ~~18~~ (~~compiled~~). on Castelnau).

Uniform blackish brown, apparently stained in preservative. Some still darker obscure horizontal streaks, ascending slightly posteriorly. Several dark, oblique streaks on side of head.

Red Sea, Arabia, Zululand, Natal, Mauritius, Madagascar, India, East Indies, Philippines, Japan. We have but a single example.

4839. Jolo market, Jolo. February 11, 1908. Length 350 mm.

Depth 35 3/4; head 5 1/3 to 6. Snout 1 3/5 in head from snout tip; eye 10, 7 in snout; rudimentary crest and very feeble supraorbital ridges; opercles with additional radiating striae but no median keel; snout with reticulating raised lines, rest of head and body uniformly granular; indication of nuchal ridge.

Rings 25 to 28 + 20 to 27; body little wider than deep; ventral surface wider than dorsal; trunk longer than tail; keels moderately well defined; upper trunk keel continued to fifth caudal scute, below origin of keel, which begins on side and attains dorsal profile at sixth ring; lower keel continuous.

D. 34 to 38; A. 4, minute;

caudal rays 10 or 11; pectoral 21 to 23.

Head light brown, opercles opalescent below. Body brown, darker above, with some indications of markings. Dark brown marking on front edges of each scute. Ventral surface of trunk opalescent, of tail light brown. Length 360 mm.

(White and Hale.)

Western Australia, South Australia, Victoria.

Genus Leptonotus Kaup

Leptonotus Kaup, Archiv Naturges., vol. 19, pt. 1, p. 232, 1853. (Type Lyngnathus blainvillianus Eydoux and Gervais, designated by Jordan, Genera of Fishes, pt. 2, p. 253, 1919.)

Acmonotus Philippi, Ann. Univers. Chile, vol. 93, p. 382, 1896. (Type Acmonotus chilensis Philippi, monotypic.)

U.S.N.M.

Biological Results of the Third de Schauensee Siamese Expedition

Part I. — Additional Fishes

By Henry W. Fowler

The specimens reported in this paper were all obtained in Siam and received subsequent to my report in the Proceedings on the main collection. The localities are: Kratt, South Siam, December 1933; Ban Thung Luang, near Hua Hin, South Siam, January 1934; Bangkok, February 5, 1934. They are represented by 149 specimens referable to 41 species, of which 9 appear to be undescribed. new species, one a new genus, and one a new subgenus. The Academy is further indebted to Mr. Rodolphe Meyer de Schauensee for this gift to its museum.

Body with trunk much swollen
in profile, laterally greatly
compressed, back very narrow
and belly trenchant. Tail
nearly twice body length.
Female with back very trenchant
with age-depth .5 times breadth,
in young 1½ to 3 times.

Point, 12 to 14 fathoms); Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 363 (references). 1/3 Thompson, Marine Biol. Rep. South Africa, vol. 4, 1918, p. 89. 1/3 Von Bonde, Fisheries Marine Surv. South Africa, Special Rep., no. 1, 1923, p. 21. 1/3 Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 238 (Delaware Bay, Tuckerton River mouth in 60 fathoms).

Depth 2 4/5 to 3; head 3 to 3 1/8, width 2 to 2 1/6. Snout 3 in head; eye 3 1/3 to 3 2/3, 1 1/5 to 1 2/5 in snout, 1 to 1 1/5 in interorbital; maxillary reaches eye, expansion 2 to 2 3/5 in eye, length 2 7/8 to 3 in head; band of 5 or 6 irregular rows of fine teeth in jaws, posteriorly 5 or 6 biserial molars with inner row more blunt, also outer enlarged conic row of teeth; interorbital 3 1/5 to 3 2/3, broadly convex. Gill rakers 7 + 11,

Analysis of Species

a.' Opercle without keel; D. 35 to 39; size larger.

b.' D. 35 to 37; rings 20 or 21 + 50. blainvillianus.

b.² D. 38; rings 21 + 49. semistriatus.

b.³ D. 39; rings 18 + 49. norae.

b.⁴ D. 42; rings 21 + 40? tristriatus.

a.² Opercle with keel; D. 24 to 32; size smaller.

c.' D. 24, on 1 + 5 rings; rings 17 + 42 to 44. caretta.

c.² D. 28 to 32, on 1 + 5 rings; rings 16 or 17 + 37 or 38. costatus.

c.³ D. 32, on 2 + 7 rings; rings 18 + 44. elevatus.

1077

Leptonotus blainvillianus (Eydoux and Gervais)

Syngnathus blainvillianus Eydoux and Gervais, Mag. Zool. Guérin, vol. 4, p. 3, pl. 17, 1837 (type locality, "Indicum mare?").

Syngnathus Favorite, Zool., p. 79, pl. 32, 1839 (Günther, Cat. Fish. Brit. Mus., vol. 8, p. 162, 1870 (Chile; South Sea). — Waite, Rec. [illegible] 4, 1894.

Eydoux and Souleyet, Voy. Favorite, vol. 5, Hist. Nat., pt. 2, p. 79, pl. 32, 1839 ("mare Indicum").

Syngnathus blainvilleanus Guichenot, Hist. Nat. Chile, Gay, Zool., vol. 2, p. 348, 1848.

Syngnathus blainvillei Delfin, Revist. Chil. Hist. Nat., pts. 3-4, p. 43, 1899-1900 (1901) (Talcahuano; Valparaiso).

Leptonotus blainvillianus (Eydoux and Gervais)

Lyngnathus blainvillianus Eydoux and Gervais, Mag. Zool. Guérin, vol. 4, p. 3, pl. 17, 1837 (type locality, "Indicum mare?").

~~Dor. Zoology, Fish., p. 79, pl. 32, 1839~~ — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 162, 1870 (Chile; South Sea). — Waite, Rec. Canterbury Mus., vol. 1, pt. 3, p. 174, pl. 27, fig. 2, 1911 (-off Stewart Island, 34 to 41 fathoms). vol. 1, no. 1, p. 14, 1907 (reference)

Lyngnathus blainvilleanus Guichenot, Hist. Nat. Chile, Gay, Zool., vol. 2, p. 348, 1848.

Lyngnathus blainvillei Delfin, Revist. Chil. Hist. Nat., pts. 3-4, p. 43, 1899-1900 (1901) (Talcahuano; Valparaiso).

caudal base and 10.? more on latter; tubes 58 in lateral line to caudal base and 4.? more on latter; 22 scales above lateral line, 33 below, 78 predorsal, 33 rows across cheek to preopercle angle; body scales with small basal auxiliary scales except on predorsal and head above; fins all with fine basal scales; maxillary naked. Scales with 7 to 7 basal radiating striae; 24 to 32 apical denticles, with 3 series transversely; circuli fine.

D. $\frac{\text{XI}}{\text{III}}$, 15, $\frac{\text{I}}{\text{I}}$, third spine $3\frac{1}{5}$ in total head length, first ray $4\frac{1}{6}$; A. $\frac{\text{III}}{\text{III}}$, 7, $\frac{\text{I}}{\text{I}}$, third spine 4, third ray $2\frac{4}{5}$; caudal 2, truncate, rounded convexly behind as expanded; least depth of caudal peduncle $4\frac{1}{8}$; pectoral 2; ventral $2\frac{1}{3}$.

Lyngnathus (Leptonotus) blainvillianus Steindachner, Zool. Anzeiger, Suppl. Band, vol. 4, p. 331, 1898 (~~Leptonotus~~ ~~Bogotá~~ Tumbes; Talcahuano).

Leptonotus blainvillii Kaup, Cat. Lophobr. Fish Brit. Mus., p. 46, 1856 (South America; Peru; Auckland Islands; New Zealand).

~~Abbott, Proc. Acad. Nat. Sci. Philadelphia, p. 338, 1870.~~

Leptonotus blainvilleanus Lamériel, Hist. Nat. Poiss., vol. 2, p. 581, 1870 (type; Peru; Patagonia; Oceania?; Auckland Islands).

Leptonotus blainvillianus Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 88, 1914 (1915) (Peru; Orange Bay). — G. F. Abbott, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 338 (reference). —

depth 3; head 2 1/3, width 2 1/5. Snout 3 4/5 in head from snout tip; eye 5 1/2, 1 2/5 in snout, greater than interorbital; maxillary reaches 3/4 in eye, expansion 1 3/5, length 2 1/10 in head from snout tip; teeth in narrow bands in jaws, rather long and slender, biserial along sides of mandible; pair of canines in front of each jaw; bands of small teeth on vomer and palatines; interorbital 6 1/4, slightly convex; hind preopercle edge with small blunt denticles, 3 enlarged at angle; median opercular spine nearer lower and upper most advanced. Gill rakers 7 + 14, lanceolate, slender, longer than gill filaments or 1/2 of eye; 6 above and 4 below rudimentary.

Scales 108 in lateral line to

— Mc Culloch, Mem. Austral. Mus.,
vol. 5, pt. 1, p. 86, June 29, 1929
(reference).

Cancrid Panulirus natalensis Stimpson

Panulirus natalensis Stimpson, Denkschr. Akad. Wiss. Wien, Math.-Naturw. Classe, vol. 71, pt. 1, 1902, p. 134. Port Natal.

1/m Barnard, Ann. South African Mus., vol. 21, pt. 2, 1927, p. 307 (Mossel Bay, Agulhas Banks, Natal, Delagoa Bay, 75 fathoms). Panulirus ornatus (not Linnaeus) Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, pp. 474, 475 (Cape of Good Hope). 1/m Thompson, Marine Biol. Rep. South Africa, no. 4, 1918, p. 84 (references).

1/m Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 227 (Fort Dauphin, Madagascar).

Panulirus affinis (part) Bouvier, Proc. Zool. Soc. London, 1887, p. 458 (Cape of Good Hope).

1/m Gilchrist and Thompson, Ann. South African Mus., vol. 6, 1908–10, p. 252 (Natal, between anchorage & St. John's and Bluff

Hemithylacus petersii Duméril, Hist. Nat. Poiss., vol. 2, p. 600, 1870 (type locality, Puerto-Montt).

Acanthotus chilensis Philippi, Ann. Univers. Chile, vol. 93, p. 383, 1896 (type locality, Coronel). — Delfin, Revist. Chil. Hist. Nat., pts. 3-4, p. 43, 1899-1900 (1901) (Corral, Lanquenes).

Epinephelus latifasciatus (non Schlegel) Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 354 (Yokohama).

Epinephelus döderleini Franz, Abhandl. Bayer. Akad. Wiss., Suppl. Band 1, 1910, p. 35. Yokohama, Izushi. — Tanaka, Figs. Descript. Fishes Japan, vol. 35, June 20, 1927, p. 654, pl. 153, fig. 423 (Tanaka).

Trunk slightly swollen medially (males and young females) to greatly swollen (old females) ovoid with depth 2/2 its length, upper and lower edges truncate. Head and trunk 1½ to 1⅔ in tail. Snout long as space from front eye edge to pectoral fin base; head with fine striae, without ridges.

Rings 20 or 21 + 50, smooth. ~~Lateral trunk keel~~ median trunk keel continuous with upper caudal keel.

D. 35 to 37, begins somewhat before vent; caudal well developed; short egg pouch on 11 rings.

Young with broad brown cross bands. With age very small, light, brown-edged ocelli.

(Günther.)

Genus Leptonotus Kaup

Leptonotus Kaup, Cat. Lophobr. Fish Brit. Mus., p. 46, 1856. (Type Lyngnathus blainvillianus Eydoux and Gervais,

Acmonotus Philippi, Ann. Univers. Chile, vol. 93, p. 382, 1896. (Type Acmonotus chilensis Philippi,

1082
(name only)

Leptonotus semistriatus Kaup

(Archiv Naturges., vol. 19, pt. 1, p. 233, 1853

Leptonotus semistriatus Kaup, Cat. Lophobr. Fish Brit. Mus., vol. 2, p. 48, 1856 (no type locality "origin not noted"). — Duméril, Hist. Nat. Poiss., vol. 2, p. 582, 1870 (type). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 89, 1914 (1915) (South Australia; Port Phillip; Tasmania). — Mc Culloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 85, June 29, 1929 (reference).

Syngnathus semistriatus Castelnau, Proc. Zool. Acclim. Soc. Victoria, vol. 1, p. 199, 1872 (Victoria).

3 1/3 to 4 1/3, fifth ray 2 1/8 to 2 2/5; caudal 1 1/2 to 1 2/3, truncate; least depth of caudal peduncle 3 1/3 to 3 3/5; pectoral 1 3/4 to 2 1/10; ventral 1 3/4 to 2.

Coal brown, paler and much lighter on under surface of head, tail and abdomen. Back and upper sides with about 12 dark brown longitudinal lines, little inclined upward posteriorly and with alternating paler lines within interspaces, these often variously incomplete. Iris brown. Membrane of spinous dorsal blackish marginally. Pectoral pale brown. Ventral dusky terminally.

Arabia, India, Ceylon, East Indies, Philippines, China, Melanesia.

Syngnathus semifasciatus Günther, Cat. Fish. Brit. Mus., vol. 8, p. 162, 1870 (type locality, South Australia; Tasmania; Australia). — Macleay, Proc. Linn. Soc. New South Wales, vol. 6, pt. 1, p. 288, 1882 (~~South Australia~~; Tasmania; Port Philip). — Johnston, Prc. Roy. Soc. Tasmania, p. 134, 1882 (1883). — Duncker, Fauna Südw. Austral. Michaelsen and Hartmeyer, vol. 2, pt. 1, p. 241, 1909. (Port Phillip; Tasmania).

Syngnathus verreauxianus Dumeril, Hist. Nat. Poiss., vol. 2, p. 573, 1870 (type locality, Tasmania).

longer than gill filaments or 1/5 in eye.

Scales 96 to 104 in lateral line to caudal base with 12 to 15? more on latter; tubes 60 to 66 in lateral line to caudal base and 5 to 7 more on latter; 20 or 21 scales above lateral line, 34 to 36 below, 57 to 67 predorsal, 30 to 32 rows across cheek to preopercle angle; body scales each with many fine basal auxiliary scales; fins all covered with fine basal scales; maxillary expansion largely finely scaled above. Scales with 12 to 15 basal radiating striae; 30 to 32 apical denticles, with 5 to 7 transverse series; circuli fine.

D. X or XI, 19, I or 18, I, third spine 2 2/3 to 3 in total head length, first ray 2 2/3 to 2 7/8; A. III, 8, I, third spine

Trunk strongly compressed (adult females) and rather elevated, depth 5 in its length. Body 1 1/3 in tail. Snout equals space between front eye edge to middle of second trunk ring; head with fine striae, without ridges.

Rings 21 + 49; shields smooth. d. 38; caudal well developed; vent below end of front third of dorsal.

Upper part of trunk with numerous, very small, light, dark edged ocelli, lower part with narrow brown vertical bar on each ring. White stripe, edged black above and below, from lower part of snout, through eye, over gill cover. Length 236 mm. (Günther.)

South Australia, Tasmania.

Cat 179 Pagellus affinis Boulenger

Pagellus affinis Boulenger, Proc. Zool. Soc. London, 1887, p. 658. Muscat, East Arabia. 1/3 Steindachner, Denkschr. Akad. Wiss. Wien, Math.-Naturw. Classe, vol. 71, pt. 1, 1907, p. 134, pl. 2, fig. (Tamarida and Gischkin, South Arabia).

Depth 2 3/4, head 3 1/5. Snout 2 4/5 in head from snout tip; eye 3 4/5, 1 1/3 in snout, least preorbital width 1 1/2 in eye; maxillary nearly reaches opposite eye, length 3 1/10 in head; 2 rows of small molars on side of jaw; interorbital 3 1/3, moderately high; preopercle edge entire.

Scales 60 to 63 in lateral line; 7 above, 16 below, 14 above anal origin shown on figure, 5 rows on cheek to preopercle ridge, 11 rows horizontally across upper part of opercle; caudal

1085

Leptonotus norae (Waite)

Syngnathus norae Waite, Proc. New Zeal. Inst., vol. 1, p. 25, 1910 (type locality, ~~East coast New Zealand between~~ Stewart Island and Port northward to Pegasus Bay ~~Lyttleton, 20 to 54 fathoms~~); Rec. Canterbury Mus., vol. 1, no. 3, p. 173, pl. 27, fig. 1, 1911 (between Stewart Island and Port ~~compiled~~ Lyttelton, 20 to 54 fathoms); vol. 1, no. 4, p. 318, December 28, 1912 (reference).

Leptonotus norae Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 89, 1914 (1915) (compiled ~~New Zealand~~).

Syngnathus pelagicus (not Linnaeus) Waite, Rec. Canterbury Mus., vol. 1, no. 1, p. 14, April 25, 1907 (reference); vol. 1, no. 4, p. 318, December 28, 1912 (reference).

51866. Jolo market, Jolo. March 7, 1908. Length 33½ mm.

18673. Hinunangan Bay, Leyte Island. July 30, 1907. Length 13½ mm. [17-3.]

1 example. Ulugan Bay, Palawan Island. December 27, 1908. Length 94 mm. [977.] Slaty brown on back, under parts lighter. Below dorsal line of dark greenish brown, extending full length of dorsal. On back and upper side are similar lines, oblique and more or less broken. On head and nape and behind eye are small spots of same color. Spinous dorsal with smoky margin. Soft dorsal clear. Anal clear, similar to color of back but lighter. Caudal same. Pectoral like color of side. Ventral darks smoky.

Depth 2 4/5 in head and trunk; head 2 3/5, 7 2/5 in total length. Snout 1 2/3 in head, more than twice postocular; eye 7 in head; opercle without ridge.

Rings 18 + 49.

D. 39, begins on anterior of 2 rings occupied by vent, base not elevated; caudal rays 8; pectoral 13.

Green, with brown cross bands, 5 semi bands on body. Three middle rings, each of which occupy 3 rings, have above lateral body ridge brown vertical marks on each of contributing rings. Eight complete bands across tail. Brown line from eye to snout. (Waite.)

Length 224 mm.

New Zealand.

1086a

Leptonotus ~~Leptognathus~~ tristriatus Fowler

Leptonotus tristriatus Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 444, fig. 1, 1921 (type locality, Fiji).

Lygnathus tristriatus Fowler, Mem. Bishop Mus., vol. 10, p. 113, fig. 24, 1928 (type).

Depth 11 in body to vent (tail end broken off); head 2 4/5. Snout 1 1/2 in head; eye 10 3/4, 8 in snout; interorbital flat; opercle without keel, with few weak fine radiating striae.

Rings 21 + 40? (tail end damaged); firm, with numerous, fine, vertical striae; keels without spines. Upper trunk keel extends to seventh caudal ring, discontinuous with upper

17983. Simaluc Sibi Sibi Island, north of Tawi Tawi. September 23, 1909. Length 80 mm.

21883 and 21884. Pingaan Island, between Jolo and Tawi Tawi. September 21, 1909. Length 97 to 106 mm.

11498. Sulade Island, vicinity Jolo. September 17, 1909. Length 89 mm.

16033. Sulade Island. September 18, 1909. Length 94 mm.

22260. Tapiantana Island. September 13, 1909. Length 104 mm.

23743. Bataan Island, Tawi Tawi. November 11, 1908. Length 73 mm. [276.]

14302, 14303, 16247, 16249, 16250, 16253, 16255, 16257, 16493. Tsomebal Island, vicinity Jolo. September 18, 1909. Length 75 to 108 mm.

10468. Tilig Bay, Mubunga Island, southern Luzon. July 14, 1908. Length 63 mm.

caudal keel which begins on last trunk ring; median lateral trunk keel ends on last trunk ring; lower trunk and caudal keels continuous; median ventral trunk keel to vent.

D. 42, on 3 trunk and 8 caudal rings, fin height $5\frac{4}{5}$ in head; pectoral rays 12, fin $7\frac{1}{3}$ in head; A. very small.

Dull brownish, on back obscure paler dots or minute rounded spots. Brown band along side of snout to eye, continued back over opercle and upper side of back, gradually merging in color of latter before dorsal. Median narrow streak of same color on upper surface of snout, continued over head above to predorsal, much narrower than lateral bands, or across interorbital

1/3 its width. All bands on head with darker margins, bordered with dusky brown lines. Dorsal pale brown.

Polynesia.

A. N. S. P., No. 33136. Fiji. Mrs. Agnes F. Kenyon. Length 136 mm to end of broken tail. Type of Leptonotus tristriatus.

Head 9; rugose. Tail
rather longer than body.
Rings 19+37; smooth.

Leptonotus

~~Lygnathus~~ caretta (Klunzinger)

Lygnathus caretta Klunzinger, Sitzs. Ber. Akad. Wiss. Wien, math.-naturw. Kl., vol. 80, pt. 1, p. 419, 1879 (1880) (type locality, Port Phillip). ~~Hardegg Inv. Inv. New South Wales, vol. , 1887, Reptilien.~~ — Düncker, Fauna Südw. Austral. Michaelsen and Hartmeyer, vol. 2, pt. 1, p. 244, 1909 (Port Phillip).

Leptonotus caretta. Mc Culloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 85, June 29, 1929 (reference).

Lygnathus modestus (not Günther) Klunzinger, Archiv Naturges., vol. 38, pt. 1, p. 88, 1872 (Port Phillip).

— 44

naked. Scales with 8 basal radiating striae; sometimes few very feeble minute apical denticles; circuli very fine.

D. XI, 9, I, eleventh spine 1 1/2 to 1 2/3 in total head length, sixth ray 2 2/5 to 3 in combined head and body to caudal base; A. III, 9, I, third spine 1 7/8 to 2 in head, sixth ray 2 1/4 to 2 1/2 in combined head and body to caudal base, caudal 1 1/2 to 1 4/5, ends in long median point; least depth of caudal peduncle 2 in head; pectoral 1 1/10; ventral 1 3/4 to 2 1/8 in combined head and body to caudal base.

Dark brown, and rat juncture of each scale row longitudinally on body dark or blackish band. Iris dark brown. Body and fins,

Body 2 in entire length; head 8 ½ to 9. Snout 2 ¼ in head; opercle with short keel anteriorly; 2 nuchal shields with median longitudinal keel.

Rings 17 + 42 to 44. Lateral trunk keel distinct to anal ring; caudal keels obsolete or absent.

D. 24, begins before end of anal ring; anal very rudimentary. caudal and pectoral distinct.

Blackish brown, about 12 x treaks crosswise on body. (Klunzinger.)
Length 100 mm.

Victoria.

of each fin clear lake red. Paired fins clear blue gray. Length 1830 mm. (Rüppell, Klunzinger.)

Red Sea, Muscat, Zanzibar, Madagascar.

Leptonotus costatus Waite and Hale

Leptonotus costatus Waite and Hale, Rec. South Austral. Mus., vol. 1, no. 4, p. 301, fig. 43, January 29, 1921 (type locality, Spencer Gulf; St. Vincent's Gulf). — Waite, Rec. South Austral. Mus., vol. 2, no. 1, p. 53, April 23, 1921 (reference). — McCulloch, Mems. Austral. Mus., vol. 5, pt. 1, p. 85, June 29, 1929 (reference).

Depth 10 1/3; head 9 1/5, 2 1/2 in trunk; trunk 2 1/5 in tail. Snout 2 3/5 in head, 1 1/2 in postorbital, with median crest bifurcating posteriorly to form strongly marked supraorbital ridges; another ridge on each side from top snout to front eye edge; eye 6 1/2 in head, 2 1/2

Serranus poecilonotus Schlegel, Fauna Japon., Poiss., fo. 1, 1842, p. 6, pl. 4, fig. 1. Nagasaki. — Richardson, Ichth. China Japan, 1846, p. 233 (copied). — Bleeker, Verh. Batav. Genootsch. vol. 26, 1857, no. 4, p. 61. (Nagasaki). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 155 (copied).

Epinephelus poecilonotus Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 414 (Misaki).

Serranus angularis (non Cuvier) Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 126 (Mauritius)

Serranus radiatus Day, Proc. Zool. Soc. London, 1867, p. 694. (near Madras).

Serranus (Epinephelus) drummeus (non Bloch) Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, vol. 47, 1883, p. 230; pl. 5, figs. 1—2 (Japan).

in snout; interorbital concave; opercle with radiating striae and ridge on anterior half; distinct occipital and nuchal ridges.

Rings 16 or 17 + 37 or 38. Body less than $\frac{1}{3}$ broad as deep, keels well defined; back nearly flat, whole ventral surface lacute and keeled; upper trunks keel ends on third caudal acute; upper lateral trunks keel ~~ends on third caudal acute~~ extends on last trunk ring below origin of caudal keel; lower trunks ~~ridge~~ keel continuous with lower caudal keel.

D. 28 to 32, on 5 or 6 trunks and 3 or 4 caudal rings; A. 2, minute; pectoral 10, long as eye. Brood pouch on 11 caudal rings.

Dark bar from snout to eye, then to pectoral. Body olive green above, sides opalescent, each

acute with vertical crescentic bar, convexity directed forward. Tail olive, with few darker bars anteriorly. In male ground color darker, markings less defined, brood pouch sooty. Length 119 mm.

(Waite and Hale.)

South Australia.

1892

~~Leptonotus~~
~~Dorychthys~~ elevatus (~~Hutton~~)

Dorychthys elevatus Hutton, Cat. Fish. New Zealand, p. 68, 1872. (type locality, Wellington Harbor)

Dorychamphus elevatus Waite, Rec. Canterbury Mus., vol. 1, No. 1, p. 14, April 25, 1907 (reference).

mandible, also front of each jaw with outer row of short emic canines, slightly more prominent than other teeth; interorbital 2 1/2 to 4 7/8, convex, preopercle with very minute, obsolete denticles. Gill rakers 5+15, short tubercle, like points, 1 3/5 in gill filaments.

Scales 50 to 56 in lateral line along and above course to caudal base and 5 or 6 more on latter; tubes 50 or 51 in lateral line to caudal base and 5 to 9 more on latter; 10 to 12 above, 18 to 23 below, 17 to 20 predorsal to occiput; 8 to 11 on cheeks to preopercle edge, flange naked. Suprascapula with feeble denticles. Scales with 12 to 15 basal radiating striae; 46 to 112 apical denticles, weak, obsolete, with 6 transverse series of basal elements; circuli fine.

Leptonotus elevatus Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 90, 1914 (1915) (New Zealand). — Rendahl, Vidensk. Medd. Dansk naturh. Foren. Kjöbenhavn, vol. 81, p. 2, 1925 (Stewart Island, Halfmoon Bay).

Lyngnathus blainvillianus (not Eydoux and (Gervais) Waite, Sub-Antarct. Islands New Zeal., Chilton, vol. 2, p. 588, 1909 ( ); Rec. Canterbury Mus., vol. 1, pt. 3, p. 174, pl. 27, fig. 2, 1911.

p. 105, pl. 7, fig. 1. — Boulenger, Cat. Fishes Brit. mus., vol. 1, 1895, p. 208 (Red Sea, muscat, Mauritius). — Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 74 (hagasaki). — Jordan and Richardson, Proc. U. S. Nat. mus., vol. 37, 1910, p. 454, fig. 11 (Tokyo). — Weber, Siboga Exped., vol. 47 Fishes, 1913, p. 202 (Bara, Buru Straits). — Jordan and Thompson, Mem. Carnegie mus., vol. 6, no. 4, 1914, p. 249 (misaki). — Jordan and Hubbs, Mem. Carnegie mus., vol. 10, no. 2, 1925, p. 235 (Toba). — Barnard, Ann. South Afr. mus., vol. 21, 1927, p. 476 (natal and Zululand coast).

Combined head and trunk rather more than half of tail. Snout not half long as head; opercle with oblique ridge slanting backward and upward.

Rings 18 + 44. No spines. Median lateral keel continuous with upper caudal keel.

D. 32, on 2 trunk and 7 caudal rings; pouch whole length of trunk.

Brown, marbled with lighter, darker on snout. Head spotted with white. Length 82 mm.

(Hutton.)

New Zealand.

finely scaled basally, also 2 low rows of fine basal scales along soft dorsal and anal, little higher posteriorly).

D. XII, 10, I, third spine 2 3/5 in total head length, first ray 3 2/5; A. III, 10, I, third spine 3 4/5, first ray 3 1/2; caudal 1 1/3, forked, lobes pointed; least depth of caudal peduncle 3 1/3; pectoral 1, ventral 1 3/5.

In life rose red. Length 150 to 160 mm. (Steindachner.)

Arabia.

Genus Doryrhamphus Kaup

Doryrhamphus Kaup, Cat. Lophobr. Fish Brit. Mus., p. 54, 1856. (Type Doryrhamphus excisus Kaup, monotypic.)

Body short, rather stout. Snout short, slightly shorter or longer than postorbital. Opercle with complete longitudinal keel, with prominent radiating ridges ventrally. Edges of shields prominent, posteriorly ending in spine, otherwise smooth like those of head. Only median dorsal keel on snout rather high and roughly serrated. Trunk rings more numerous than caudal. Upper and lower keels of trunk and tail discontinuous. Median keels

of trunk and lower keels of tail continuous. Intermedial shields (scutella) large. Dorsal rays 22 to 27, over 4 to 6 trunk rings and 2 to 4 caudal. Anal postmedian. Caudal large. Pectoral moderate. Eggs large, isolated in cells of abdominal skin of male, enclosed by extensive lateral cutaneous folds, which temporarily united in median line.

Marine shore forms of the Indo Pacific.

Doryrhamphus excisus Kaup

Doryrhamphus excisus Kaup, Cat. Lophobr. Fish Brit. Mus., p. 54, pl. 3, fig. 5, 1856 (type locality, Red Sea). — Duméril, Cat. Lophobr. Fish Brit. Mus., vol. 2, p. 586, 1870 (Red Sea). — Weber, Siboga Exped., vol. 57, Fische, p. 117, 1913 (Junior).

Doryichthys excisus Günther, Cat. Fish. Brit. Mus., vol. 8, p. 186, 1870 (compiled).

Jarvis, Tongareva, Howland and Baker Islands). — Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, 1927, p. 6 (Poeloe Tokan Island, Sumatra).

Serranus hexagonatus var. mexra Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 141 (Singapore, China, Philippines, India). — Elera, Cat. Fauna Filip., vol. 1, 1895, p. 462 (Cavite, Jaic, Masuguru). — Gorgoza, Mem. Soc. Españ. Hist. Nat. Madrid, vol. 17, 1888, p. 262 (Masuguru; Manila).

Holocentrus hexagonatus Schneider, Syst. Ichth. Bloch, 1801, p. 323. Tahiti.

Perca hexagonata (Forster) Schneider, Syst. Ichth. Bloch, 1801, p. 323 (name in synonymy).

Serranus hexagonatus Valenciennes, Hist. Nat. Poiss., vol. 2, 1829, p. 330 (Borabora and Nualan); vol. 6, 1830, p. 516 (Carteret Harbor, New Ireland). — Guerin, Iconogr. Règne Animal, Poiss., 1829-44, p. 3, pl. 4, fig. 1 (Borabora and Nualan). — Richardson, Ichth. Voy. Sulphur, vol. 1,

Dorychamphus melanopleura (Bleeker)

Syngnathus melanopleura Bleeker, Nat. Tijds. Ned. Indië, vol. 15, p. (458) 464, 1858 (type locality, Nova Selma, Cocos-Keeling Islands); vol. 16, p. 240, 1858 (Cocos Keeling).

Dorychamphus melanopleura Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 61, 1914 (1915) (Mauritius; North New Guinea). — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 64, fig. 27, 1922 (Timor; Sarasin; Bleeker's material). — Duncker and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 15, 1925 (Dörperspitze, New Guinea). — Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 137, July 7, 1925 (reference). —

(Amboina); vol. 8, 1876-77, pl. (54) 382, fig. 4.

Epinephelus stellatus Snyder, Proc. U.S. Nat. Mus., vol. 42, 1912, p. 498 (Okinawa).

Serranus reevesii Richardson, Ichth. China Jap., 1846, p. 232. Canton, China.

Pomacentrus punctatus (Russell) Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 141. India. (Name in text.)

Whitley, Rec. Austral. Mus., vol. 16, no. 1, p. 8, October 7, 1927 (Michaelmas Cay and Green Island, Queensland). — Fowler, Mem. Bishop Mus., vol. 10, p. 111, 1928 (Tutuila, Samoa); vol. 11, no. 5, p. 323, 1931 (reference).

Pan-Pacific Inst. Journ., vol. 2, no. 1, p. 4, January-March 1927 (Fiji), p. 8 (Rotuma);

Dorythamphus excisus (part) Kaup, Cat. Lophobr. Fish Brit. Mus., p. 54, 1856 (Red Sea). — Dumeril, Hist. Nat. Poiss., vol. 2, p. 586, 1870 (Red Sea, Massaua).

Epinephelus hexagonatus Bleeker, Ned. Tijds. dierk., vol. 1, 1863, p. 344 (Madagascar); Atlas Ichth. Ind. Néerl., vol. 7, 1873-76, pl. (23) 301, fig. 2. — Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 224 (Diego-Suares and Mahambo, Madagascar).

Serranus fasciatus Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 329. East of India, Mauritius, Ceylon. — Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23

Serranus nigriceps Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 517. No locality (on M. Gaimard).

Serranus confertus Bennett, Life of Raffles, 1830, p. 686. Sumatra.

Serranus stellans Richardson, Ann. Mag. Nat. Hist. London, vol. 9, 1842, p. 23. Melville Island on south side of Torres Straits.

Epinephelus stellans Bleeker, Atlas Ichth. Ind. Néerl., vol. 7, 1873-76, p. 54

Dorygichthys excisus Peters, Monatsb. Akad. Wiss. Berlin, p. 447, 1876 (Mauritius); Proc. Trans. Roy. Soc. Arts Sci. Mauritius, n. ser., vol. II, p. 58, 1883 (Mauritius).

Dorygichthys pleurotaenia Günther, Rep. Voy. Challenger, vol. I, pt. 6, p. 62, pl. 28, fig. D, 1880 (type locality, Honolulu). — Snyder, Bull. U. S. Fish Comm., vol. 22, p. 523, 1902 (1904) (Honolulu. — Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, p. 434, 1910 (type; Rotuma). — Whitley, Journ. Pan Pacific Inst., vol. 2, no. 1, p. 8, January - March 1927 (Rotuma).

Günther, Philos. Trans. Roy. Soc. London, vol. 168, 1879, p. 470 (Rodrigues). — Károli, Termesz. Füzetek, Budapest, vol. 5, 1882, p. 150 (Ceylon). — Meyer, Anm. Voc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 8 (Manado, Celebes; Ternate; Kordofan). — Bocage, Mem. Acad. Sci. Lisboa, vol. 19, 1895, p. 22 (Angola, Mozambique; Manilla). Day, Fauna Brit. Ind., vol. 1, 1889, p. 447. — Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban). — Kent, Great Barrier Reef, 1893, p. 281 (Port Darwin), p. 367 (Queensland). — Weber, Zool. Forschungr. Austral. Yemen, vol. 5, 1895, p. 267 (Amboina).

Hexagonatus var. hexagonata Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 141 (Madagascar, Cuba, Philippines, Amboina, Celebes, Banka, Borneo, Natal, Fiji).
M. Edw., Cat. Faune Filip., vol. 1, 1895, p. 462

Doryrhamphus pleurotaenia Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, p. 121, fig. 37, 1905 (compiled). — Steindachner, Sitzg. Ber. Akad. Wiss. Wien, Naturw.-math. Kl., vol. 115, pt. 1, p. 1419, 1906 (Samoa).

Microphis pleurotaenia Jordan and Seale, Bull. Bur. Fisheries, vol. 25, p. 214, 1905 (1906) (compiled). — Mac Culloch, Proc. Linn. Soc. New South Wales, vol. 35, p. , 1910 (Murray Island; Cairns Reef; Mast Head Island).

Microphis extensus Snyder, Proc. U. S. Nat. Mus., vol. 40, p. 525, 1911 (type locality, Naha, Okinawa); vol. 42, p. 495, pl. 62, fig. 2, 1912 (type).

1844, p. 82, pl. 38, fig. 1 (South Pacific). — Cantor, Cat. Malayan Fishes, 1849, p. 7 (Pinang Sea). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 503 (reference). — Guichenot, Poiss. Ile Réunion, vol. 2, 1862, p. 23. — Kner, Reise Novara, Zool., vol. 1, pt. 5, 1865, p. 25 (Nicobars, Sydney, Nicobars). — Playfair, Fishes of Zanzibar, 1866, p. 10. (Zanzibar, Great Comoro). — Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 20, 1870, p. 683 (Kosseir, Red Sea). — Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 7, pl. 7, figs. a-b (Society Islands, all Polynesia). — Day, Fishes of India, pt. 1, 1875, p. 14 (Andamans). — Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876, p. 263 (Palm Islands, Queensland). — Martens, Preuss. Exped. Ost-Asien, vol. 1, 1876, p. 386 (Benkoelen, Sumatra; Singapore; Amboina). — Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 435 (Mauritius). —

Depth 16; head 4 1/2, width 3 1/6. Snout 2 in head from snout tip; eye 4 3/4, 2 2/5 in snout, greater than interorbital; maxillary 1 1/5 in eye; interorbital 1 1/3, concave.

Rings 19 + 15. Two well serrated ridges along snout above to interorbital; upper lateral denticulated ridge from snout tip to orbital rim, which also serrated; upper opercular edge with keel, with radiating ridges. Body rings strongly keeled, each with spine posteriorly. Upper caudal and upper trunk keels not continuous, former beginning opposite front of dorsal; median lateral trunk keel continuous with lower caudal keel; lower trunk keel extends

to first caudal; median ventral keel low, reaches vent.

D. 22, on 4 trunk and 3 caudal keels, fin height equals eye; A. 4, 1 3/4 in eye; caudal 2/5 in head; pectoral equals eye, rays 18.

Deep brown. Whitish band along mid dorsal surface from snout tip to caudal base. Under surface of head and trunk whitish, latter with dark brown median band extending to caudal. dors al and pectoral light brown. Caudal darks or neutral blackish, with several large pale or whitish blotches.

Red Sea, Mauritius, Cocos-Keeling Islands, East Indies, Riu Kiu, Japan, Queensland, Polynesia, Hawaii.

1100c

U. S. N. M., No. 68226. Naha, Okinawa, Riu Kiu. Albatross Collection. 1906. Length 47mm. Type of Microphis extensus.

Genus Microphis Kaup

Archiv Naturges., vol. 19, pt. 1, p. 234, 1853.

Microphis Kaup, Cat. Lophobr. Fish Brit. Mus., p. 63, 1856. (Type Syngnathus decocata Buchanan-Hamilton, designated by Jordan, Genera of Fishes, pt. 2, p. 254, 1917.)

Doryrhamphinarum Kaup, Cat. Lophobr. Fish Brit. Mus., p. 62, 1856. (Type Syngnathus heterorama Bleeker, monotypic.) (Inadmissible.)

Snout longer than remaining part of head. Opercle with complete longitudinal keel and radiating ridges. Upper keels of trunk and tail discontinuous, lower keels discontinuous or continuous and median (lateral keels of trunk and lower keels of tail continuous or not. Keels of shields or rings more or less serrated, usually ending in free spine behind. Intermedial shields present, also 1 prenuchal and 2 nuchals. Eggs small, numerous, isolated in open cells belonging to swollen skin of somewhat dilated abdomen of male; not covered by cutaneous folds but laterally protected

Serranus morrhua Valenciennes.

Serranus morrhua Valenciennes, Hist. Nat. Poiss., vol. 9, 1833, p. 434. Mauritius. — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 254 (copied). — Klunzinger, Verh. zool. bot. Gesellsch. Wien, vol. 20, 1870, p. 678 (Red Sea). — Day, Fishes of India, pt. 1, 1875, p. 21, pl. 5, fig. 1 (Madras).

Serranus (Hyposerranus) morrhua Klunzinger, Fische Roth. Meer., 1884, p. 3, pl. 1, fig. 2 (Koseir). — Day, Fauna British India, vol. 1, 1889, p. 453. — Boulenger, Proc. Zool. Soc. London, 1889, p. 244.

Serranus (Epinephelus) morrhua Bagmayer, Abhandl. Bayer. Akad. Wiss., vol. 26, pt. 6, 1913, p. 9 (Oman).

Epinephelus morrhua Savage, Hist. Nat. Madagascar, Poiss., 1871,

by ventrally diverging plates belonging to lower lateral edges of trunk. Dorsal rather long, with over 30 rays, opposite vent, above at least 7 rings of largest part of tail. Anal postmedian. Caudal well developed, usually middle ray prolonged.

Fishes of fresh and brackish water connected with tropical seas.

g.[3] Above brown, rounded blackish spots everywhere; young dark, with round black spots and some large blue white blotches, largest at predorsal cross bar down to opercle and vertical bar on hind half of spinous dorsal down to lateral line.

Fario

x.[2] Spots on body variable and unequal but separated by pale or whitish network of lines.

h.' Pectoral 1/2 to 1 2/3 in head.

i.' Gray or brownish white to pale olive, covered all over with very numerous dark olive brown or blackish, round or hexagonal spots, separated by very narrow, often linear intervals of pale ground color; spots smaller and more numerous with age; fins spotted like body; soft dorsal and caudal sometimes with very

Analysis of Species

a.' Lower trunk and caudal keels discontinuous; median trunk keel and lower caudal keel continuous.

b.' Head 4 1/2 to 5; snout somewhat longer than twice postorbital. *brachyurus*.

b.² Head 7; snout much shorter than twice postorbital. *manadensis*.

a.² Lower trunk and caudal keels continuous; median trunk keel not continuous with lower caudal keel but subcontinuous with upper caudal keel.

c.' D. 47 to 61. *boaja*.

c.² D. 65 to 68. *heterosoma*.

~~Dorpichthys~~ Microphis brachyurus (Bleeker)

Syngnathus brachyurus Bleeker, Verh. Batavia. Genoots. (Trosk.), vol. 25, p. 16, 1853 (type locality, Batavia; Panimbang, Java; Priaman, West Sumatra); Nat. Tijdsr. Ned. Indië, vol. 7, p. 105, 1854 (Priaman, Batavia, Palembang); vol. 13, p. 58, 1857 (Kajeli, Buru), p. 476 (Lebak, Bantem, Java); [illegible] and [illegible] Act. Soc. Sci. Ind. Néerl., No. 3, vol. 1, p. 6, 1856 (Manado).

Genus Serranus Cuvier.

Serranus Cuvier, Règne Animal, vol. 2, 1817, p. 76. Type Perca gigas Brünnich, designated by Fowler, Proc. Acad. Nat. Sci. Phila., 1907, p. 252.

Daba Forskål, Descript. Animal., 1775, p. 44. Type Perca areolata Forskål, tautotypic vernacular. (Inadmissible.)

Chrysomelanus (Plumier) Lacépède, Hist. Nat. Poiss., vol. 4, 1803, p. 160. Type Chrysomelanus piscus (Plumier) Lacépède = Sparus chrysomelanus Lacépède, tautotypic. (Inadmissible.)

Merou (Cuvier) Bonaparte, Prosp. Syst. Ict. Gen., 1831, p. 101. Type Perca gigas Brünnich, designated by Jordan, Genera of Fishes, pt. 2, 1919, p. 175.

Cerna Bonaparte, Fauna Italica, Pesc. (Introd. Class. Poiss.), vol. 3, pt. 1, 1833-41,

Dorychthys brachyurus Günther, Cat. Fish. Brit. Mus., vol. 8, p. 184, 1870 (East Indies, Polynesia, Anciteum, type of Syngnathus polyacanthus) ~~Rep. Voy. Challenger, Zool., pt. 6, p. 36, Ovalau, Fiji~~ — Schmeltz, Cat. Mus. Godeffroy, no. 5, p. 38, 1874 (Rarotonga; Viti Islands); no. 7, p. 61, 1879 (Rarotonga; Viti Islands). — Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 36, 1880 (Ovalau, Fiji). — Pöhl, Cat. Mus. Godeffroy, no. 9, p. 41, 1884 (Viti). — Weber, Zool. Med. Nort Indië, vol. 3, p. 428, 1895 (Tjimana and Tangha Rivers, Celebes). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 214 (not description), fig. 20, 1905 (1906) ( ). — Regan, Biol. Americana Centrali,

A.738 and A.747. Sibuadan Island, vicinity Subuko Bay, Borneo. September 28, 1909. Length 276 to 290 mm.

[2102.] Dutch East Indies. December 1, 1909. Length 185 mm.

A.969. Binang Unang Island, Celebes. November 17, 1909. Length 273 mm.

A 1032. Buba Buba Island, Celebes. November 20, 1909. Length 266 mm.

A 1042. West of Malibagu Point, Celebes. November 21, 1909. Length 293 mm.

A 1161, A 1173, 13030, 19945. Game Road, Gilolo Island. December 1, 1909. Length 155 to 288 mm. [2101.]

A 1111. Makyan Island. November 28, 1909. Length 283 mm

A 1066. Tidore Island, south of Ternate. November 25, 1909. Length 292 mm.

Price, p. 55, 1908 (not localities). — Weber, Nova Guinea, vol. 5, pt. 2, p. 228, 1908 (Klipang River, north New Guinea). — Günther, Journ. Mus. Godeffroy, vol. 9, p. 433, 1910 (Aneiteum, Ovalau, Huahine, Vavau, Rarotonga, Samoa). — Weber, Siboga Exped., vol. 57, Fische, p. 117, 1913 (Lombok; Batjan); — Nova Guinea, vol. 9, pt. 4, p. 552, 1913 (Mbai River and Fate River, north New Guinea).

Our series shows a fairly constant color pattern, the greatest variation in the extent of the pale terminal area on the pectoral fin. In preserved examples the blue lines on the head become quite obscure. The species may easily be known by its broad pale border to the soft dorsal and its general dusky brown coloration.

6565. Port Maricaban, southern Luzon. July 21, 1908. Length 330 mm.

7312. Sablayan Bay, Mindoro. December 12, 1908. Length 278 mm.

A 718. Damaran Island, vicinity of Sibuko Bay, Borneo. September 27, 1909. Length 361 mm. (Type. — Cat. No. U. S. N. M.).

A 1515. Biabirahan Island, Borneo. December 31, 1909. Length 291 mm.

Microphis brachyurus Lunéril, Hist. Nat. Poiss., vol. 2, p. 595, pl. 26, fig. 4, 1870 (Tahiti, Réunion, Madagascar). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 214, fig. 20, 1905 (1906) (Vaikigano River and Apia, Samoa)! — Duncker, Spolia Zeylanica, vol. 7, p. 26, 1910 (Ceylon). — Kendall and Goldsborough, Mem. Mus. Comp. Zool., vol. 26, p. 264, 1911 (Kusaie). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 29, p. 269, 1911 (Valtvella; Trincomale). — Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 408, 1912 (Tanegashima and Samoa). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 45, 1914 (1915) (Pangani. Falls, German East Africa). — McCulloch

Largely deep umber brown, more or less uniform or lower surface scarcely paler. Four obscure blue lines horizontally on head, first above eye back on opercle, second from near snout end, third along maxillary groove and fourth over maxillary and posteriorly. Iris brownish. Dorsal largely dusky, soft fin with broad, contrasted whitish upper border. Caudal and anal dusky brown, anal sometimes with lower edge pale. Pectoral brown basally, terminally whitish to dull yellowish, sometimes over outer half of fin. Ventral dusky.

East Indies and Philippines. Allied with C. pollemi and C. rogua, but differing at once in coloration; also its caudal fin is emarginate.

and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 137, July 7, 1925 (reference). — Duncker and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 13, 1925 (north coast Bird Island Bay, Admiralty Islands); Pulie Bay, Möve Harbor, Harvey Reid Bay, Zoller Bay and Matava Harbor, New Pommerania; Langermak Bay, Friedrich Wilhelm, Potsdam and Kelana Harbors, Dörpertpitz and Kaiserin Augusta River, New Guinea). — Chevey, Inst. Océan. Indo Chine, 19e Note, p. 18, August 25, 1932 (Cochin China). — McCulloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 90, June 29, 1929 (reference).

57 to 70 predorsal nearly to snout end, 23 to 26 rows obliquely down over cheek to preopercle angle; all fins more or less finely scaled basally; scales with 14 or 15 rows transversely across maxillary expansion. Scales with 5 or 6 basal radiating striae; apical denticles 28 to 52, close set, compact, in 5 to 13 transverse series; circuli moderately small, become coarser apically.

D. IX, 15, I, first spine 5 to 5 1/3 in total head length, ninth spine 2 7/8 to 4, first ray 2 7/8 to 3 1/8; A. III, 9, I, third spine 3 7/8 to 3 2/3, fourth ray 2 1/5 to 2 1/4; caudal 1 1/4 to 1 1/3, slightly emarginate or concave; least depth of caudal peduncle 2 1/5 to 2 1/3; pectoral 1 3/5 to 1 2/3; ventral 1 4/5 to 1 7/8.

Dorygnamphus brachyurus Weber, Siboga Exped., vol. 57, Fische, p. 119, 1913 (Lombok, Batjan Bay). Dorygnamphinarum brachyurum Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 442, 1921 (Tahiti); Bull. Bishop Mus., no. 22, p. 37, 1925 (Tahiti); Mem. Bishop Mus., vol. 10, p. 111, fig. 22, 1928 (Kusaie, Society Islands, Samoa, Tahiti, Nukuhiva); vol. 11, no. 5, p. 323, 1931 (reference).

bands of villiform teeth on each palatine and across vomer, none on tongue; interorbital $3\frac{4}{5}$ to $4\frac{2}{3}$, convex; nostrils together, front one with tubular flap, apertures alike, close before upper front eye edge; hind preopercle edge very minutely serrated, feebly or obscurely so with age; opercular spines 3, lower most forward and median closer to lowers. Gill rakers 2+17, lanceolate, slightly longer than gill filaments or $1\frac{1}{4}$ in eye; 8 above and 6 below rudimentary.

Scales 110 to 117 in lateral line to caudal base and about 12 to 15 more on latter; tubes 68 to 73 in lateral line to caudal base and 2 or 3 more on latter; 16 or 17 scales above lateral line, 3 1 or 3½ below,

Doryichthys hasselti Kaup, Archiv Naturges., vol. 19, pt. 1, p. 233, 1853 (no description); Cat. Lophobr. Fish Brit. Mus., p. 57, 1856 (type locality, Java; Jahiti).

Syngnathus fluviatilis (Kuhl and Van Hasselt) Kaup, Archiv Naturges., vol. 19, pt. 1, p. 233, 1853 (name in synonymy).

Doryichthys millepunctatus Kaup, Archiv Naturges., vol. 19, pt. 1, p. 234, 1853 (no description); Cat. Lophobr. Fish Brit. Mus., p. 60, 1856 (type locality, Madagascar). — Bleeker, Nederl. Tijds. Dierk., vol. 1, p. 344, 1863 (Madagascar). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 183, 1870 (compiled).

size. Cheek scaly. Dorsal spines 11 to 13, depressible in groove. Anal spines 3.

Warmer eastern and southern Atlantic, Mediterranean and western Indian Ocean.

Analysis of [illegible] species 6 1/2 inches

a.' Pagellus. Scales of occiput extending forward opposite middle of eyes.

b.' Scales 11 across operculum; rose red.

affinis.

b.² Scales 6 across operculum; with dark transverse bands at least in young.

natalensis.

a.² Mudipagellus. Scales of occiput not extending forward beyond hind eye edge; red, without transverse bars.

c.' Scales 43 to 50 in lateral line.

lithognathus.

c.² Scales 60 to 65 in lateral line.

Corr 13 names only

mormyrus.

Doryichthys (Syngnathus millepunctatus Guichenot, Mém. Soc. Sci. Chérbourg, ser. 2, vol. 2, p. 148, 1866 (Madagascar).

Doryichthys auronitens Kaup, Archiv Naturges., vol. 19, pt. 1, p. 234 (no description), Cat. Lophobr. Fish Brit. Mus., p. 59, 1856 (type locality, Macassar). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 182, 1870 (compiled).

Microphis auronitens Dumeril, Hist. Nat. Poiss., vol. 2, p. 597, 1870 (compiled).

Genus Pagellus Cuvier Cuv 130

Pagellus Cuvier, Règne Animal, ed. 2, vol. 2, 1829, p. 128. Type Sparus erythrinus Linnaeus, designated by Jordan and Fesler, Rep. U. S. Fish Comm., pt. 17, 1889 (1893), p. 517.

Mixipagellus Fowler, Limer. Mus. Novitates, No. 162, March 31, 1925, p. 4. Type Sparus centrodontus Delaroche, orthotypic.

Front teeth in jaws cardiform, without canines, outer series usually with larger ones than those behind; several series of rounded molar teeth in both jaws, with innermost row gradually becoming larger posteriorly, elongated or transversely oval. Hind nostril oval or slit like. Preorbital narrow or deep. Opercle not armed. Branchiostegals 6. Air bladder simple. Pyloric coeca 4. Scales moderate in

Syngnathus polyacanthus Bleeker, Act. Soc. Sci. Ind. Néerl., no. 3, vol. 1, p. (6) 77, 1856 (type locality, Manado, Celebes).

Microphis bleekeri Day, Proc. Zool. Soc. London, p. 316, fig., 1865 (type locality, Malabar); Fishes of Malabar, p. 265, fig., 1865. — Duméril, Hist. Nat. Poiss., vol. 2, p. 599, 1870 (Cochin).

8581 and 20572. Catbalogan, Samar. April 15, 1908. Length 98 to 107 mm.

7741 and 7742. Caxisigan Island, Balabac. January 2, 1908. Length 297 or 298 mm.

7485, 18837, 19798. Endeavor Strait, near anchorage. December 22, 1908. Length 75 to 267 mm. Reddish preorbital bar and red bars on side.

Doryichthys bleekeri Günther, Cat. Fish. Brit. Mus., vol. 8, p. 182, 1870 (compiled). — Day, Fishes of India, pt. 4, p. 680, pl. 174, fig. 3, 1878 (Cochin, Malabar); Fauna British India, Fishes, vol. 2, p. 465, 1889 (Alwaye River).

→ ↑ Corythroichthys bleekeri Veale and Beaw, Proc. U. S. Nat. Mus., vol. 33, p. 240, 1907 (Zamboanga).

Microphis jouani Duméril, Hist. Nat. Poiss., vol. 2, p. 592, 1870 (type locality, Fresh waters of New Caledonia).

Doryichthys stictorhynchus Ogilby, Mem. Queensland Mus., vol. 1, p. 34, 1912 (type locality, Moreton Bay).

Doryichthys bleekeri Günther, Cat. Fish. Brit. Mus., vol. 8, p. 182, 1870 (compiled). — Day, Fishes of India, pt. 4, p. 680, pl. 174, fig. 3, 1878 (Cochin, Malabar); Fauna British India, Fishes, vol. 2, p. 465, 1889 (Alwaye River).

→ e edge
gth 2
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bands
tin 21

Syngnathus schlegeli (not Kaup) Day, Proc. Zool. Soc. London, p. 316, 1865.

Microphis jouani Duméril, Hist. Nat. Poiss., vol. 2, p. 592, 1870 (type locality, Fresh waters of New Caledonia).

Doryichthys stictorhynchus Ogilby, Mem. Queensland Mus., vol. 1, p. 34, 1912 (type locality, Moreton Bay).

expansion 1/4 to 1 1/2 in eye, length 2
to 2 1/2 in head from snout tip;
teeth in broad villiform bands

→ (Alwaye Riv

Lyngnathus

Day, Proc. Z
316, 1865.

Microphis fo

15976
Bugsuk Island, north Balabac Strait. January 5, 1907. Length 132 mm.

7857. Cagayan de Jolo. January 8, 1907. Length 262 mm.

7736. Caxidigan Island, north Balabac Strait. January 2, 1907. Length 315 mm.

12243. Lampinigan Island, south of Zamboanga. September 11, 1907. Length 181 mm.

6790. Malamipa Island, east of Zamboanga. September 8, 1907. Length 305 mm.

8370. Malapascua Island, north of Cebu. March 16, 1907. Length 410 mm.

9294. Murcielagos Bay, Mindanao. August 7, 1907. Length 229 mm.

8477. Rasa Island, eastern Palawan. April 1, 1907. Length 405 mm.

Depth 22 to 29 1/4; head 4 3/4 to 4 4/5, width 7 to 7 2/5. Snout 1 1/2 to 1 3/5 in head from snout tip; eye 9 1/5 to 9 1/4, 5 1/4 to 5 4/5 in snout, greatly exceeds interorbital; maxillary 13 1/5 to 14; interorbital 13 to 16 1/2, concave.

Rings 19 to 22 + 20 to 24. Upper trunk keel not extended beyond dorsal fin; upper caudal keel begins little before dorsal on same ring, then continuous along upper side of tail; median lateral trunk keel slopes down opposite dorsal origin continuous with lower caudal keel; lower trunk keel extends over first 2 caudal rings but not continuous with lower caudal keel; median ventral keel of trunk continuous to vent. A strong median keel across

Depth $3\frac{4}{5}$ to $4\frac{1}{8}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width $2\frac{1}{5}$ to $2\frac{2}{5}$. Snout 4 to $4\frac{2}{5}$ in head from snout tip; eye $3\frac{1}{3}$ to $3\frac{3}{5}$, greater than snout or interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{1}{2}$ in eye, expansion $2\frac{1}{8}$ to $2\frac{1}{2}$ in eye, length $2\frac{1}{4}$ to $2\frac{2}{5}$ in head; bands of minute villiform teeth in jaws, on vomer and palatines, pair of upper front canines, pair of lower smaller closer canines and 5 or 6 canines along each mandibular ramus, also several slightly enlarged teeth in row on each palatine; interorbital $3\frac{7}{8}$ to $4\frac{1}{10}$, slightly convex; preopercle ridge entire, edge finely denticulate though denticles of lower edge larger; preorbital entire. Gill rakers 5 or 6 + 1/2, lanceolate, about $\frac{1}{4}$ in gill filaments or $2\frac{3}{4}$ in eye.

Scales (pockets) 30 in lateral line to caudal base and 4 or 5 more on latter, 1 or 2

opercle and 4 weak radiating keels below. L. light median rostral keel to front of interorbital.

D. 36 to 46, on 1 to 3 + 6 to 9 rings, height 1 to 1½ in eye; A. rays 3 or 4; caudal length 3¾ to 4⅓ in head, convex behind; pectoral rays 18 to 23, fin broad, slightly greater than eye.

Brown, variegated and marbled darker. Along side of head from side of snout, through eye, across opercle and along upper side of trunk above median lateral keel, dark brown band. Dorsal pale. Caudal dusky.

Melanostoma argyreum Gilbert and Cramer, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 416, pl. 39, fig. 3. Off Hawaiian Islands, in 295 to 298 fathoms.

Synagrops argyrea Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 618 (Pailolo Channel, off Oahu, off Maui, in 122 to 290 fathoms). — Fowler, Bishop Mus. Bull., no. 22, 1925, p. 8 (Guam).

Synagrops malayanus Weber, Siboga Exped., vol. 57, Fische, 1913, p. 196, fig. 52, Bali Sea, Timor Sea and Lobetobi Straits.

East Africa, Madagascar,
Mascarenes, India, Ceylon,
East Indies, Philippines, Cochin
China, Japan, Queensland,
Melanesia, Micronesia, Polynesia.

One example. Alinsaog, Anilao River, Pasi, Panay. January 13, 1908. Length 78 mm.

One example. Balayan Bay. Taal Anchorage. January 19, 1908. Length 68 mm.

Seven examples. Batangas, Luzon. June 7, 1908. Length 64 to 128 mm.

One example. D. 5129. Dukunguin Point, N. 44° E., 3.80 miles (lat. 7° 41' 30" N., long. 122° 01' 45" E.), Sulu Sea off western Mindanao. In 0 to 100 fathoms. February 5, 1908. Length 67 mm.

Two examples. Iriga River tidewater, Lagonoy Gulf, Luzon. June 18, 1909. Length 158 to 167 mm.

Two examples. Malabang Anchorage. May 21, 1908. Length 88 to 90 mm.

Synagrops japonicus (Steindachner and Döderlein).

Melanostoma japonicum (Döderlein) Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, vol. 48, 1884, p. 5, pl. 1, fig. 2. Tokyo. — Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 72 (Yokohama); Proc. U. S. Nat. Mus., vol. 23, 1901, p. 908 (copied).

Synagrops japonicus Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 16 (copied).

Synagrops japonica Fowler and Ball, Bishop Mus. Bull., No. 26, 1925, p. 13 (Lahaina, Maui). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 2, 1925, p. 231 (Misaki).

Two examples. Hogan Point, Panay. February 3, 1908. Length 81 to 87 mm.

Four examples. Paluan River, Mindoro. December 11, 1908. Length 99 to 165 mm.

One example. Ragay River, Ragay Gulf, fresh water, Luzon. March 10, 1909.

Five examples. Tawao River, Borneo. September 30, 1909. Length 119 to 167 mm).

Analysis of the species.

a¹. Hynagrops. Fins all smooth, without any serrae or spines; body slender and tapering. japonicus

a². Parascombrops. Ventral spines at least with an external row of serrae.

b¹. Only ventral spines with outer edges serrated; snout nearly long as eye; body slender, depth 3 3/4 to 4. philippinensis

b². Front of spinous dorsal, of spinous anal and of ventral spines all antrorsely serrated; snout much shorter than eye; body deep, depth 3 to 3 1/8. serratospinosus

Microphis ~~Dorychthys~~ manadensis (Bleeker)

Syngnathus manadensis Bleeker, Act. Soc. Ind. Néerl., vol. 1, no. 3, p. (6) 78, 1856 (type locality, Manado).

Dorychthys manadensis Bleeker, Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Celebes). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 184, 1870 (type).

Microphis manadensis [illegible]

— Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 46, 1922 (Ambon; Dutch North New Guinea).

[illegible] (Ambon; Waigeu); — Deuticke and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 14, 1925 (Langemak Bay, New Guinea).

microphis
~~Dorygichthys~~ manadensis (Bleeker)

Syngnathus manadensis Bleeker, Act. Soc. Ind. Néerl., vol. 1, no. 3, p. (6) 78, 1856 (type locality, Manado).

Dorygichthys manadensis Bleeker, Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Celebes). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 184, 1870 (type).

Microphis manadensis Duméril, Hist. at. Poiss., vol. 2, p. 595, 1870 compiled). — Duncker, Mitteil. Naturh. ms. Hamburg, vol. 32, p. 47, 1914 1915) (German New Guinea; Samar, Loquilocum). — Duncker and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 14, 1925 (Langemak Bay, New Guinea).

Hippocampus Bellaggi

Cephalopholis rogaa (Forskål).

Perca rogaa Forskål, descript. animal., 1775, p. 38. Djidda, Red Sea. — Bonnaterre, Tabl. Ichth., 1788, p. 131 (Red Sea). — Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 1315 (Arabia). — Walbaum, Artedi Pisc., vol. 3, 1792, p. 344 (on Forskål).

Bodianus rogaa Schneider, Syst. Ichth. Bloch, 1801, p. 334 (Red Sea). — Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 282, 296 (Arabia). — Fowler, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 12, 1904, p. 542 (Padang, Sumatra).

Serranus rogaa Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 349 (on Forskål). — Rüppell, Atlas Reise nördl. Afrika, Fische, 1828, p. 105, pl. 26, fig. 1 (Red Sea). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 116 (Red Sea). — Playfair,

Doryrhamphinarum manadensis Fowler, Mem. Bishop Mus., vol. 10, p. 112, 1928 (compiled).

Doryichthys bernsteini Bleeker, Arch. Néerl. Sci. Nat., vol. 2, p. (397) 398, 1867 (type locality, Halmahera). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 183, 1870 (compiled). — Weber, Nova Guinea, vol. 5, pt. 2, p. 229, 1908 (Mamapiri, north New Guinea).

Microphis bernsteini Duméril, Hist. Nat. Poiss., vol. 2, p. 594, 1870 (compiled).

11663. Kowloon market, China. October 5, 1908. Length 164 mm.

12390 and 12391. Hong Kong market, China. August 13, 1908. Length 114 to 176 mm.

Microphis jagorii Peters, Monatsb. Akad. Wiss. Berlin, p. 280, 1868 (type locality, Samar). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 179, 1870 (compiled). — Duméril, Hist. Nat. Poiss., vol. 2, p. 594, 1870 (compiled).

19588. Simalue Island, north of Tawi Tawi Group. September 22, 1909. Length 9½ mm. [1971.]

12197. Tataan, Simulac Island, Tawi Tawi Group. February 20, 1908. Length 1½ mm.

8693. Jutu Bay, Jolo Island, second anchorage. September 19, 1909. Length 146 mm.

5048. Sandakan Bay, Borneo. February 29, 1908. Length 2½0 mm.

13485. Basa Reef, Gulf of Boni, Celebes. December 17, 1909. Length 165 mm.

21432. Dodepo and Pasejogo Islands, Gulf of Tomini Celebes. November 16, 1909. Length 111 mm.

17993. Limbe Strait, Celebes. November 10, 1909. Length 160 mm.

21448. Makasser Island. December 16, 1909. Length 150 mm.

A 1417. Makasser market. December 22, 1909. Length 312 mm.

Head 7, not much longer than dorsal; tail without caudal equals or slightly shorter than trunk. Snout 1½ times postorbital; opercle with complete longitudinal keel and 5 radiating ridges below.

Rings 20 to 22 + 24 to 27, transversely striated, keels slightly elevated, only in young minutely serrated, without terminal spine; head edges smooth. Lower trunk and caudal keels discontinuous; median trunk keel and lower caudal keels continuous.

D. 35 to 42, on 2 or 3 trunk and 6 or 7 caudal ~~keel~~ rings; A. rays 3 or 4; caudal equals or shorter than postorbital; pectoral rays 18 to 20. Vent somewhat behind dorsal origin.

Brownish. Narrow dark longitudinal band from snout to to hind edge of opercle or somewhat farther. Length 2 1/2 mm. (Weber and Beaufort.)

East Indies, Queensland.

Microphis boaja (Bleeker)

Syngnathus boaja Bleeker, Nat. Tijds. Ned. Indië, vol. 1, p. 46, 1850 (1851) (type locality, Banjermassing, in rivers); vol. 2, p. 69, 1851 (Banjermassing); vol. 3, p. 428, 1853 (Sambas), p. 429 (Pontianak); Verh. Batavia. Genoot. (Trock.), vol. 25, p. 14, 1853 (Borneo; Palembang, Sumatra); Nat. Tijds. Ned. Indië, vol. 6, p. 518, 1854 (Lematang-Enim, Sumatra); vol. 8, p. 152, 1855 (Bandjermassing); vol. 9, p. 418, 1855 (Bandjermassing); Act. Soc. Sci. Ind. Néerl., no. 6, vol. 3, p. 2, 1857-58 (Sinkawang, Borneo).

median; rays 14 to 18. Anal spines 3, second usually largest, rays 7 to 9. Caudal rounded or lunate. Pectoral rays 15 to 20, rounded, short, rarely symmetrical. Ventral moderate, inserted below pectoral, each with strong spine, fins close together.

A large genus, the principal one of the family and widely distributed in most tropical seas. Very many species have been described, though many of them extremely variable in color, pleasing and brilliant. Many are highly valued as food fishes and some reach a large size.

Microphis boaja Bleeker, Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Sumatra; Borneo); Ned. Tijds. Dierk., vol. 2, pp. 33, 172, 1865 (Siam). — Duméril, Hist. Nat. Poiss., vol. 2, p. 593, 1870 (Bangkok). — Duncker, Mitteil. — Vaillant, Nouv. Arch. Mus. Hist. Nat. Paris, ser. 3, vol. 5, p. 62, 1893 (Sebroeang, Borneo). [illegible] 32, [illegible] ecca, [illegible] bes, Cochin, China, Formosa). — Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 47, 1922 (Sintang, Borneo, Makassar).

Microphis boaja Bleeker, Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Sumatra; Borneo); Ned. Tijds. Dierk., vol. 2, pp. 33, 172, 1865 (Siam). — Duméril, Hist. Nat. Poiss., vol. 2, p. 593, 1870 (Bangkok). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 47, 1914 (1915) (Siam, Malacca, Sumatra, Java, Borneo, Celebes, Cochin, China, Formosa). — Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 47, 1922 (Sintang, Borneo, Makassar).

Braunich, orthotypic.

Homalogrystes Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876, p. 268. Type Homalogrystes günntheri Alleyne and Macleay, monotypic.

Hypoperramus Klunzinger, Fische Roth. Meer., 1884, p. 3. Type Perranus morrhua Valenciennes, designated by Jordan, Genera of Fishes, pt. 4, 1920, p. 429.

Phrynotitan Gill, Standard Nat. Hist., vol. 3, 1885, p. 255. Type Batrachus gigas Günther, orthotypic.

Dorsichthys boaja Günther, Cat. Peters, Monatsb. Akad. Wiss. Berlin, 1868, p. 276 (Siam). —

Tijds. Dierk., vol. 4, p. 126, 1873 (1874) (reference). — Steindachner, Sitzs. Ber. Akad. Wiss. Wien, vol. 83, pt. 1, p. 210, 1881 (Menam at Bangkok). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 21, p. 188, pl. 2, figs. 9, a-c, 1903 (1904) (Klang, Muar River). — Chu, Biol. Bull. St John's Univ., no. 1, p. 99, January 1931 (reference).

Dorsichthys boaja Elera, Fauna Filipinas, vol. 1, p. 597, 1895 (Luzon, Cavite, Santa Cruz).

Dorypichthys boaja Günther, Cat. Fish. Brit. Mus., vol. 8, p. 180, 1870 (China). — Bleeker, Ned. Tijds. Dierk., vol. 4, p. 126, 1873 (1874) (reference). — Steindachner, Sitzs. Ber. Akad. Wiss. Wien, vol. 83, pt. 1, p. 210, 1881 (Meham at Bangkok). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 21, p. 188, pl. 2, figs. 9, a-c, 1903 (1904) (Klang, Muar River). — Chu, Biol. Bull. St John's Univ., no. 1, p. 99, January 1931 (reference).

Dorypichthys boaja Elera, Fauna Filipinas, vol. 1, p. 597, 1895 (Luzon, Cavite, Santa Cruz).

Body stout, compressed. Mouth large. Maxillary with supplemental bone well developed. Enlarged teeth of inner series of each jaw depressible. Canines few, large, in front of jaws. Nostrils well separated. Preopercle moderately serrated on hind edge, lower limb entire, without distinct antrorse spine. Opercle with 2 strong spines. Gill rakers short, rather few. Pyloric appendages 10 to 20. Scales small, ctenoid, often somewhat imbedded in skin. Maxillary usually with small scales. Soft vertical fins usually more or less scaly. Lateral line complete, scales triangular, cycloid. Dorsal spines about 11, seldom 10, not filamentous, last ones somewhat shorter than

Doryichthys spinosus Kaup, Cat. Lophobr. Fish Brit. Mus., p. 57, 1856 (type locality, Java; Borneo; Macassar).

Syngnathus spinosus (Schlegel) Kaup, Cat. Lophobr. Fish Brit. Mus., p. 57, 1856 (name in synonymy).

Syngnathus jullieni Sauvage, Rev. Mag. Zool., ser. 3, vol. 2, p. 338, 1874 (type locality, Cochin China).

Syngnathus zonatus Károli, Természetr. Füzetek, Budapest, vol. 5, p. 188, 1881.

Microphis heterosoma (not Bleeker) Vaillant, Notes Leyden Mus., vol. 24, p. 14.

no pagination. Type Perca gigas Brünnich, monotypic.

Cynichthys Swainson, Lardner's Cab. Cyclop. (Nat. Hist. Animals), Fishes, vol. 2, 1839, pp. 168, 201. Type ~~Cynichthys~~ Perca flavopurpurea ~~Swainson~~ Bennett, monotypic.

Hyporthodus Gill, Proc. Acad. Nat. Sci. Phila., 1861, p. 98. Type Hyporthodus flavicauda Gill, monotypic.

Verilus Gill, Proc. Acad. Nat. Sci. Phila., 1861, p. 98. Type Verilus mystacinus Poey, monotypic.

Labroperca Gill, Proc. Acad. Nat. Sci. Phila., 1862, p. 236. Type Verilus labriformis Jenyns, orthotypic.

Priacanthichthys Day, Proc. Zool. Soc. London, 1868, p. 193. Type Priacanthichthys maderaspatensis Day, monotypic.

Merus Poey, Ann. Lyc. New York, vol. 10, 1871, p. 39. Type Perca gigas

Head 4 3/4 to 5 1/2; tail longer than trunk. Snout long, compressed, more or less than twice length rest of head; opercle with complete longitudinal keel, radiating ridges below.

Rings 21 to 24 + 34 to 40, transversely striate, edges not serrated but ending in spine; edges on head smooth. Lower trunk and tail keels continuous; median trunk keel and upper caudal keel subcontinuous, usually completely interrupted on last trunk ring.

D. 47 to 61, on 2 to 5 trunk and 6 or 7 caudal rings; A. 3 to 5; caudal less than postorbital; pectoral rays 23 to 27.

Greenish, yellowish below and tail blackish posteriorly. On snout and vertex irregular black patches. On trunk and front part of tail vertical bands corresponding with

shields silvery, - at least in front and hind borders, turning blue in preserved specimens. Length 430 mm. (Weber and Beaufort.)

Malaya, Siam, East Indies, Indo China, China, Formosa.

~~Doryichthys~~ Microphis heterosoma (Bleeker)

Syngnathus heterosoma Bleeker, Nat. Tijds. Ned. Indië, vol. 2, p. (417) 441, 1851 (type locality, Sambas, Borneo); Verh. Batavia. Genoot. (Trocht.), vol. 25, p. 15, 1853 (Sambas); Nat. Tijds. Ned. Indië, vol. 7, p. 164, 1854 (Natoena Island).

Doryrhamphinarum (Syngnathus) heterosoma Kaup, Cat. Lophobr. Fish Brit. Mus., p. 62, 1856 (compiled).

Microphis heterosoma Bleeker, Act. Soc. Sci. Ind. Néerl. (Sumatra), vol. 8, p. 72, 1859 (Borneo; Natoena Island). — Duméril, Hist. Nat. Poiss., vol. 2, p. 590, 1870 (compiled). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 48, 1914 (1915) (Borneo). — Weber and Beaufort,

Perca lunaria Forskål, descript.
Animal., 1775, pp. XI, 39. Djidda and
Lohaja, Red Sea. — Bonnaterre, Tabl.
Ichth., 1788, p. 131 (Red Sea). —
Gmelin, Syst. Nat. Linn., vol. 1,
1789, p. 1316
(Arabia). — Walbaum, Artedi Pisc.,
vol. 3, 1792, p. 344 (ex Forskål).
Bodianus rogaa var. lunaria Schneider,
Syst. Ichth. Bloch, 1801, p. 335 (Red Sea).
Serranus lunaria Rüppell, Neue
Wirbelth., Fische, 1835, p. 140 (note).

1131

Fish. Indo Austral. Archip.,
vol. 4, p. 48, 1922 (Bleeker's
material).

granular teeth; small patch of obtuse or rounded short teeth on vomer, not always evident; interorbital 3 1/5 to 3 2/3, convexly elevated. Gill rakers 7 or 8 + 1 to 12, lanceolate, about 3/5 of gill filaments, which 1 3/5 in eye.

Scales 51 to 60 in lateral line to caudal base and 10 nontubular more on latter; 7 above, 15 below, 40 to 44 predorsal forward opposite front eye edge; 7 rows of scales on cheek. Scales with 7 to 9 basal radiating striae; 55 to 77 minute sharp pointed apical denticles, with 10 to 17 transverse series of basal elements; circuli very fine.

D. XII, 10, I, third spine 1 4/5 to 1 7/8 in head, first ray 2 2/3 to 2 4/5; A. III, 9, I, or 8, I, third spine 2 1/2 to 3, first ray 2 1/3 to 2 1/2; caudal 1 1/10 to 1 1/8, forked, lobes pointed; least depth of caudal peduncle

1132

Dorypichthys heterorama (Günther), Cat. Fish. Brit. Mus., vol. 8, p. 180, 1870 (Borneo).

Fishes of Zanzibar, 1866, p. 2 (Zanzibar). — Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 679 (Kosseir, Red Sea); Fischer Roth. Meer., 1884, p. 3. — Boulenger Proc. Zool. Soc. London, 1889, p. 238 (muscat). — Steindachner, denksch. d. Akad. Wiss. Wien, vol. 71, pt. 1, 1907, p. 124 (Bal Hâf, Socótra).

Serranus rogersi Smitens, Verh. zool. bot. Ges. Wien, vol. 16, 1866, p. 378 (Red Sea).

Serranus (Epinephelus) rogaa Zugmayer, Abhandl. Bayer. Akad. Wiss., vol. 26, pt. 6, 1913, p. 7 (Oman).

Epinephelus rogaa Boulenger, Cat. Fishes Brit. Mus., vol. 1, 1895, p. 185 (Red Sea, Zanzibar, muscat, Ceylon).

Cephalopholis rogaa Fowler, Proc. Acad. Nat. Sci. Phila., 1907, p. 252 (Padang material).

Head 5 to 5¼; tail longer than trunk. Snout compressed, 3 or more than 3 times longer than postorbital, more than twice rest of head; opercle with complete longitudinal keel and fine radiating ridges below it.

Rings 26+38; in female thirteenth to twentieth trunk ring ventrally inflated; shields transversely striated, edges slightly serrated, somewhat behind middle extended into spine. Lower trunk and caudal keels continuous; median lateral trunk keel and upper caudal keel subcontinuous, interrupted on last trunk ring; median keels extend below upper caudal keel.

D. 65 to 68, on 6 trunk and 7 or 8 caudal rings; A. rays 4; caudal

(1133b)

minute; pectoral rays 22 or 23.

Green above, silvery below. Each trunk ring laterally with vertical dark patch in middle. Caudal blackish. Length 290 mm. (Weber and Beaufort.)

East Indies.

Genus Doryichthys Kaup

Archiv Naturgesch., 1853, pt. 1, p. 233.

Doryichthys Kaup, ~~Cat. Lophobr.~~ ~~Fish. Brit. Mus.~~, ~~1856~~, p. 56, (Type Doryichthys bilineatus (Hecbel) Kaup, designated by Jordan, Genera of Fishes, pt. 2, p. 254, 1919.)

Snout shorter or only slightly longer than rest of head.

Opercle with complete longitudinal keel, often with radiating ridges below. Keels of shields of rings conspicuous, smooth with age, usually serrated in young.

Intermedial (scutella) present as only prenuchal and 2 nuchal shield. Upper keels of trunk and tail discontinuous or discontinuous, median keels of trunk and lower keels of tail continuous.

Dorsal moderate or long, rays 24 to 66, opposite vent, over at least 6 rings, mostly on tail. Anal

usually premedian. Caudal with or without extended rays. Pectorals present. Eggs rather large, isolated in open cells, produced by skin of abdomen in male; entirely covered by broad, converging, not coalescent lateral protective plates, which sometimes with narrow cutaneous fold along free edge.

Fresh and brackish water of rivers and estuaries in the Indo Pacific.

Two species following are very imperfectly known or doubtful:

~~Doryichthys~~ Microphis pristipeltis (Kaup)

Archiv f. Naturges., vol. 19, pt. 1, p. 234, 1853 (no description);
Doryichthys pristipeltis Kaup, Cat. Lophobr. Fish Brit. Mus. (Herkel), p. 58, 1856 (no type locality). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 179, 1870 (copied).
Microphis pristipeltis Duméril, Hist. Nat. Poiss., vol. 2, p. 598, 1870 (compiled). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 49, 1914 (1915) (compiled).

14100, 14101, 14104. Endeavor Strait. December 24, 1908. Length 140 to 153 mm.

18271. Galera Bay, Mindoro Island. June 9, 1908. Length 129 mm.

7192. Ganda Island, between Jolo and Tawi Tawi. September 20, 1909. Length 206 mm.

15790. Makesi Island, Palawan. April 5, 1909. Length 188 mm.

19291. Malapascua Island, north of Cebu. March 16, 1909. Length 125 mm.

6295 to 6297. Manila market. June 13, 1908. Length 230 to 248 mm. [97, 99].

6326. Manila market. July 11, 1908. Length 250 mm.

6717. Manila market. December 4, 1908. Length 255 mm.

6741. Manila market. April 14, 1909. Length 278 mm.

Snout 1½ in head, no distinct denticulation above, short spinules on both sides; depression between elevated orbits; raised medial line on occiput and 1 extended from each orbit; back and belly equally broad.

Rings 20 + 24, edges toothed spinously, completely checking finger as drawn across.

Dorsal on eight caudal rings.

Length 74 mm. (Kaup.)

An imperfectly known species without locality.

1137

Doryichthys bilineatus Kaup

Doryichthys bilineatus (Heckel) Kaup, Archiv. Naturges., 1853, pt. 1, p. 233 (name only); Cat. Lophobr. Fish Brit. Mus., p. 56, pl. 1, fig. 8, 1856 (no type locality). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 181, 1870 (compiled). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 54, 1914 (1915) (compiled).

Microphis bilineatus Duméril, Hist. Nat. Poiss., vol. 2, p. 598, 1870 (compiled).

Case 130

Genus Pentapodus Quoy and Gaimard

Pentapodus (Cuvier) Quoy and Gaimard, Voy. Uranie, Zool., December 18, 1824, p. 294. Type Pentapodus vitta Quoy and Gaimard, monotypic. (No description.

Pentapus Cuvier, Hist. Nat. Poiss., vol. 6, 1830 (September), p. 255. Type Pparus vittatus Bloch, designated by Bleeker, Arch. Néerland. Sci. Nat. Harlem, vol. 11, 1876, p. 279.

Leiopsis Bennett, Mem. Life of Raffles, 1830 (February), p. 688. Type Leiopsis rafflesii Bennett, monotypic.

Maenoides Richardson, Icones Piscium, 1843, p. 8. Type Maenoides aurifrenatus Richardson = Pentapodus vitta Quoy and Gaimard; designated by Jordan, Classific. of Fishes, 1923, p. 197.

Maenoides Jordan, Op. cit., 1923, p. 197. Type Pentapodus vitta Quoy and Gaimard. (Error.

Classific. of fishes

Body rather high and broad, tail moderate. Snout $1\frac{3}{5}$ in rest of head; eye 10, 6 in snout; mouth very small, terminally superior; upper profile of head shown more or less straight, or snout forms 2 slight undulations, on both sides of median line on opercle halves striped and seared.

Rings 17+25. Upper border of snout twice curved and traversed by 3 elevated lines. Broad forehead striated and roughened by raised lines. Two lines in relief ~~forward~~ extend from orbit and 1 in middle of occiput.

D. 33, on 6 tail rings; A. 3; pectoral rays 18; caudal 10.

Brown, with black specks on upper border of dorsal. Caudal black. Length not given. (Kaup.)

Locality unknown.

Analysis of Species

a.' D. 24 or 25.
  b.' Rings 16 or 17 + 28. brevidorsalis.
  b.² Rings 16 + 32. decorata.
a.² D. 29; rings 18 or 19 + 32. fluviatilis.
a.³ D. 30 to 40.
  c.' Caudal rings 23 or 24. pleurostictus.
  c.² Caudal rings 28 to 30.
    d.' Eye 5 in head. retzii.
    d.² Eye 6 2/5 in head. insularis.
  c.³ Caudal rings 31 to 37.
    e.' ~~Caudal rings 30 to 36.~~
      D. 30 to 36.
      f.' Snout more than rest of head, twice postorbital. deobahatoides.
      f.² Snout less than rest of head.
        martensi.
        ocellatus.
    e.² D. 37 to 40. caudocarinatus.
a.⁴ D. 42. cuncalus.
a.⁵ D. 50. spinachioides.
a.⁶ D. 66.

Dorychthys brevidorsalis (Beaufort)

Dorychamphus brevidorsalis Beaufort, Bijdr. Dierk. Amsterdam, vol. 19, 1913, p. 103 (type locality, Stream near Kajeli, Buru).
Dorychthys brevidorsalis Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 50; 1914 (1915) (Buru).
— Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 51, 1922 (Kajeli; South New Guinea).

Head 6 2/5 to 9, 3 to 4 to vent. Snout equals postorbital, more than twice eye, upper profile slightly concave, with median ridge ending before eyes, lateral with straight ridge and above second one which ends curved below eye; orbital ridges begin before nostrils,

produced in filaments.

Olive, fins with reddish tinge.
Body with narrow, slightly oblique and undulating bluish bands, edged with darker narrow parallel stripe of same color between every pair of bands. Bands and stripes continued along side of head, but more irregular and broken up in their course. Interradial membrane of soft vertical fins with round violet spots as large as pupil of eye. Length 305 mm. (Günther.)

Celebes, Tongatabu.

continued on postorbital and
may be continuous with upper
trunk keel; low, median, slightly
scalloped keel begins behind eyes
and reaches second trunk ring;
opercle inflated, with strong
median longitudinal complete
keel, ventrally radiating second
and sometimes third longer or
shorter strong keel and numerous
fine and somewhat arborescent
striae.

Rings 16 or 17 + 28; higher than
broad, rough with transverse
ridges; keels prominent and
finely crenulated, when young
finely serrated, almost smooth
on tail. Lower trunk and caudal
keels discontinuous; median
trunk and lower caudal keels
continuous; upper caudal keel
begins on last trunk ring;
ventral trunk keel in female

rather high. Tail much longer than head and trunk.

D. 24, on 1 trunk and 5 or 6 caudal rings; anal preanedian; pectoral rays 16 or 17.

Light brown. Dark band, interrupted by white cross bars on snout runs through eye to opercle, where with white points. On body interrupted by series of black spots, 1 on each ring, enclosed in or alternating with white patches. Light ocellus with dark border on each caudal ring along its ventral edge, or caudal rings with alternating white markings. Length 98 mm. (Weber and Beaufort.)

East Indies.

1142

Doryichthys decorata (Buchanan-Hamilton).

Syngnathus decorata Buchanan-Hamilton, Fishes of Ganges, pp. 14, 363, 1822 (type locality, The Kosta-Kumarkhali and other rivers of Puraniya or Purnia in North Bengal or Bahar).

Syngnathus & Doryichthys decorata Gray, Illustr. Indian Zool. Hardwicke, (vol. 1), pl. 89, fig. 4-a, 1830-32 (salt water lake Bengal).

— Bleeker, Verh. Batavia. Genoot. (Nat. Ichth. Bengal), vol. 25, p. 80, 1853 (reference). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 179, 1870 (compiled).

Archiv Naturges., 1853, pt. 1, p. 234 (reference);

Microphis decorata Kaup, Cat. Lophobr. Fish Brit. Mus., p. 64, 1856 (compiled).

Microphis doryichata Duméril, Hist. Nat. Poiss., vol. 2, p. 590, 1870 (copied).

8417. Cebu market. March 20, 1908. Length 250 mm. Stripes pale blue with darker margin. Body olivaceous or yellowish above, becoming whitish below. Fins with pinkish shades. Lower fins rather yellow, front of anal lilac.

7544. Endeavour Strait, Palawan. December 23, 1908. Length 287 mm.

8517. Verde del Sur Island. April 6, 1908. Length 255 mm.

A 716, A 717. Danawan Island. September 27, 1909. Length 535 and 538 mm. Stripes of azure blue on ground shading from dusky above to bright lemon yellow below, red brown blotch on upper side of caudal peduncle about size of eye. Brilliant orange band from hinder edge of orbit to opposite somewhat broader than pupil. Band about half as wide across nuchal regions from slightly behind angle of

Dorypichthys decorata Day, Fishes of India, pt. 2, p. 680, 1878; Fauna British India, Fishes, vol. 2, p. 466, 1889. — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 54, 1914 (1915) (compiled).

Depth 25; head 6 1/2, width 4 1/5. Snout 1 7/8 in head from snout tip; eye 6 2/5, 4 in snout; impinging little on upper profile.

Rings 16+32,

D. 25, ~~of which~~ or 2 trunk and 5 caudal rings, fin base 1 3/5 in head; caudal 4 1/4; pectoral 5 3/4.

Brown. Red on belly and lower half of trunk with blue lines, 2 apparently on each ring. Length of figure 165 mm? (Gray.)

India. An imperfectly known species, and though said to have 30 dorsal rays Gray's figure shows but 25.

The markings along the median front of the head are also quite variable in the young, frequently also only as a few scattered small blue spots; often a single narrow blue band connects the eyes, but this is very variable and may frequently be broken or irregular, even with age.

Dorychthys fluviatilis (Bleeker)
(not Peters 1852)

Lyngnathus fluviatilis, Bleeker, Verh. Batavia. Genoot. (Trosk.), vol. 25, p. 18, 1853 (type locality, Batavia).

Dorychthys fluviatilis Bleeker, Act. Soc. Sci. Ind. Néerl. (Enum.), vol. 6, p. 188, 1859 (reference). — Kuncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 55, 1914 (1915) (compiled). — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 35, 1922 (compiled).

Microphis fluviatilis Duméril, Hist. Nat. Poiss., vol. 2, p. 598, 1870 (compiled).

Core 29

Xymphorus xpilurus Günther

Xymphorus xpilurus Günther, Journ. Mus. Godeffroy, vol. 2-3, pts. 5-6, 1874, p. 61. Palau Islands. (Typographical error.)

Xymphorus xpilurus Günther, Journ. Mus. Godeffroy, vol. 2-3, pts. 5-6, 1874, pl. 67. 1/m Schmeltz, Cat. Mus. Godeffroy, no. 6, 1877, p. 12 (Palau Islands). 1/m Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 220 (copied); Proc. Acad. Nat. Sci. Philadelphia, 1929 (1930), p. 610 (Hong Kong).

Depth 2 1/4 to 2 1/2; head 2 2/3 to 3 1/5, width 2 to 2 2/5. Xnout 2 1/5 to 2 1/3 in head from xnout tip; eye 4 3/5 to 5, 1 7/8 to 2 in xnout, 1 1/4 to 1 3/4 in interorbital; maxillary reaches opposite 1/5 to 1/3 in eye, expansion 1 1/4 to 2 1/5 in eye, length 2 1/5 to 2 3/4 in head from xnout tip; teeth small, short, as row of submolars above and about 3 rows of smaller ones in

depth 18 or 19; head 6 3/4. Snout longer than though less than twice postorbital; eye 6 to 7 in head; opercle?

Rings 18 or 19 + 32. Keels? Tail, with caudal, slightly longer than head and trunk, less than twice longer than trunk alone.

D. 29, on 3 or 4 trunk and 4 or 5 caudal rings; A. rays 4.

Greenish. Length 139 mm.

(Weber and Beaufort.)

East Indies.

Dorypichthys pleurostictus (Peters)

Microphis pleurostictus Peters, Monatsb. Akad. Wiss. Berlin, p. 278, 1868 (1869) (type locality, South Carmarines; Yarrot Bay, Abay Luzon ~~Ybabo Yarrot~~). — Duméril, Hist. Nat. Poiss., vol. 2, p. 593, 1870 (Batu Island, Luzon).

Dorypichthys pleurostictus Günther, Cat. Fish. Brit. Mus., vol. 8, p. 185, 1870 (Luzon).

— Boulenger, Ann. Mag. Nat. Hist., ser. 6, vol. 15, p. 187, 1895 (Palawan).

— Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 50, 1914 (1915) (Philippines).

Dorypichthys pleurostictus Elera, Cat. Fauna Filipinas, vol. 1, p. 597, 1895 (Luzon).

Analysis of the genera 6 Lt Succulus

a'. Canines in one or both jaws, no incisors, molars or nonmolariform teeth; fins often with filaments, sometimes produced.

b'. Lymphorinae. Front soft dorsal and anal rays end in long produced rays; coloration brilliant.

b''. Dorsals, caudal and ventrals sometimes with filaments, not anal.

c'. Pentaporinae. Outer of anterior slightly enlarged or front canines in jaws usually flaring outward. Pentaporus.

d'. Denticinae. Canines few, anterior, not flaring outward.

e'. Cheeks with less than 5, usually 3 (rarely 4) rows of scales. Synagris.

e''. Cheeks with more than 5 rows of scales.

f'. Top of head scaly. Mentes.

f''. Top of head naked. Gymnocranius.

Could be one only

Snout 2 in head; opercle without or with very indistinct ridge.

Rings 18 or 19 + 23 or 24, edges smooth. Lateral median keel uninterrupted passing to lower tail keel.

D. 30 to 32, origin well before vent, which somewhat nearer gill opening than caudal base; caudal well developed.

Brown band along side of head through eye. Length 90 mm. (Günther.)

Philippines.

Snout longer than in Dorygichthys circealus.

Dorypichthys retzii (Bleeker)

Syngnathus retzii Bleeker, Act. Soc. Sci. Ind. Néerl., no. 3, vol. 1, p. (6) 76, 1856 (type locality, Manado); (Sumatra vol. 8, p. 72, 1859 (Celebes). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 175, 1870 (types). — Duméril, Hist. Nat. Poiss., vol. 2, p. 62, 1870 (compiled). — Weber, Nova Guinea, vol. 5, pt. 2, p. 228, 1908 (Manumpiri, north New Guinea); Siboga Exped., vol. 57, Fische, p. 111, fig. 37 (tail), 1913 (Sumba; Savu Island; Kwandang Bay; Batjan; Obi major).

pointed, cleft oblique. Lateral line with 52 scales. D. X, 9; A. III, 8; caudal bilobed. Gray. Large square obscure spot on most scales of back. On lower part of body traces of 2 or 3 slight longitudinal stripes of yellow tinge. Head rather purple, with ocellated round white spots on cheeks. Throat white. Fins transparent, rather yellow. Membranes of spinous dorsal somewhat nebulous. Length 100 mm.

(Macleay.)

Queensland.

Dorypichthys retzii Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 50, 1914 (1915) (Samar, Loquilocum, & Bismarck Archipelago). — Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 52, fig. 23 (caudal fin), 1922 (Waigiu; New Guinea). — Duncker and — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 52, fig. 23 (caudal), 1922 (Simalur; Nias; Lombok; Flores; Sumba; Savu; Kwandang and Paloppo River; Celebes; Kajeli; Obi Major; Batjan; Tubak and Kairatu, Ceram; Wakai, Waigiu; Lorentz River, New Guinea).

(Samoa).

Dorycichthys retzii Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 50, 1914 (1915) (Samar, Loquilocum, & Bismarck Archipelago). — Weber and Beaufort, Fish. Indo Austral. Archip., vol. 4, p. 52, fig. 23 (caudal fin), 1922 (Waigiu, New Guinea). — Duncker and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 14, 1925 (north coast Admiralty Islands; Möve Harbor, Henry Reed Bay and Zoller Bay, New Pommerania; Langemak Bay and Dörfer Spitz, New Guinea). — Fowler, Mem. Bishop Mus., vol. 10, p. 112, 1928 (Samoa).

(caudal fin).
New Guinea)
Mohr, Mitteil
Hamburg, vol.
coast Admiral
Harbor, Henn
Zoller Bay, H
Langemak Ba
New Guinea
Bishop Mus., A
(Samoa).

Case 130

Genus Neolethrinus Castelnau

Neolethrinus Castelnau, (Researches Fish. Australia) Victorian Offic Rec. Philadelphia Exhib., 1875, p. 11. Type Neolethrinus similis Castelnau, orthotypic.

Like Lethrinus except whole palate and all inside of mouth with small molar teeth.

One species in Queensland.

Case 129

Neolethrinus similis Castelnau

Neolethrinus similis Castelnau, (Researches Fish. Australia) Victorian Office Rec. Philadelphia Exhib., 1875, p. 12. Cape York, Queensland. 1/2 Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 415 (on Castelnau).

Depth 2 2/3; head 2 2/3. Eye 3 1/2 in head; mouth rather extensible and

Microphis caudatus Peters, Monatsb. Akad. Wiss. Berlin, p. 276, 1869 (type locality, Samar). — Duméril, Hist. Nat. Poiss., vol. 2, p. 591, 1870 (compiled). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 214, fig. 21, 1905 (1906) (Gasegase River near Apia).

Doryichthys caudatus Günther, Cat. Fish. Brit. Mus., vol. 8, p. 182, 1870 (compiled). — Weber, Zool. Ergebn. Reis. Nederl. Oost Indië", vol. 3, p. 429, 1894 (Luwu, Celebes; Imbawa and Bari, Flores). — Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, p. 432, 1910 (compiled).

depth of caudal pedunicle 3/8; pectoral 1 1/3; ventral 1 2/5.

Silvery, with nacry reflection. All fins rosy, except pectoral which yellowish.

(Sauvage.)

Valenciennes gives 175 mm. as the length of this type. Sauvage says it is near Lethrinus fasciatus, but the latter differs in its convex profile. It suggests Lethrinus ramak except the second

1151.

'Weber, Nova Guinea, vol. 5, pt. 2, p. 228, 1908 (Klipang River, north New Guinea); vol. 9, pt. 4, p. 552, 1913 (Mbai River and Lorentz River at Biwak Island).

Dorysthys caudatus Elera, Fauna Filipinas, vol. 1, f. 597, 1895 (Samar) (error).

Doryrhamphus caudatus Weber, Siboga Exped., vol. 57, Fische, p. 116, 1913 (Lombok).

Microphis torrentius Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 215, fig. 22, 1905 (1906) (type locality, Vaivase River near Vailele, Samoa, in fresh water).

covered with small scales, with age greater part of head above and back with many small auxiliary scales. Scales with 6 or 7 basal radiating strial, 47 to 57 apical denticles with 5 to 8 transverse series and circuli rather fine. D. IX, 17, I or 18, I, third spine $2\frac{4}{5}$ to $3\frac{1}{6}$ in total head length, eleventh ray $1\frac{2}{3}$ to $2\frac{1}{3}$; A. III, 9, second spine $3\frac{4}{5}$ to 4, fifth ray $1\frac{2}{3}$ to 2; caudal $1\frac{1}{2}$ to $1\frac{2}{3}$, broadly truncate; least depth of caudal peduncle $2\frac{1}{4}$ to $2\frac{2}{5}$; pectoral $1\frac{1}{2}$ to $1\frac{2}{3}$; ventral $1\frac{1}{2}$ to $1\frac{3}{5}$.

In alcohol uniform blackish brown, fins blackish. Young with hind edges of soft dorsal, soft anal and caudal

Dorycharaxus vaudatus Beaufort, Bijdr. Dierk. Amsterdam, vol. 19, p. 103, 1913 (Waikā, Waigiu).

Microphis torrentius Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 215, fig. 22, 1905 (1906) (type locality, Vaivase River near Vailele, Samoa).

Doryichthys torrentium Dumeker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 55, 1914 (1915).

Case 129

Lethrinus argenteus Valenciennes

Lethrinus argenteus Valenciennes, Hist. Nat. Iles., vol. 6, 1830, p. 303. Seychelles. 1/on

Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 199, pl. 23, figs. 2 a-b (type).

Depth 2 3/5; head 3, upper front profile straight. Snout 1 7/8 in head from snout tip; eye 3 7/8, 2 in snout, maxillary reaches 3/4 to eye, expansion 1 3/4 in eye, length 2 3/4 in head from snout tip; teeth conic, small, more rounded in upper jaw; interorbital low, greater than eye.

Scales 55 in lateral line to caudal base and 6 more nontubular out over latter; 6 above, 17 below, predorsal scales forward opposite hind eye edge.

D. X, 9 (XI, 8 on figure), second spine 2 4/5 in total head length, fourth ray 2 1/10; A. III, 8, second spine 3 1/2, first ray 2 2/3; caudal 1 4/5, deeply emarginate; least

depth 19 to 20 1/2; head 8 1/4 to 10, width 3 to 3 1/3. Snout 2 1/4 to 2 1/3 in head from snout tip; eye 5-1/2 to 6, 2 1/2 to 2 4/5 in snout, greater than interorbital; maxillary 1 1/4 to 1 1/3 in eye; interorbital 1 1/3 to 1 3/4, deeply concave; opercle with complete longitudinal or horizontal keel, below none to 3 radiating keels.

Rings 16 or 17 + 28 to 30; transversely striated; keels finely serrated in young, smooth with age. Upper trunk keel continued nearly or quite to end of dorsal, usually discontinuous with upper caudal keel, which begins on last trunk ring; lateral trunk keel continuous with lower caudal keel; lower trunk keel not reaching tail; median ventral keel reaches vent, low. Nuchal keel from behind eyes to middle of third trunk ring.

D. 35 to 40, on 1 or 2 trunk and 7 or 8 caudal rings, fin height 2 to 2 1/5 in snout; caudal 2 to 2 2/3 in head, median rays often prolonged (? always if not broken off); pectoral 2 1/3 to 2 2/5, rays 17 or 18.

Brown, paler or lighter below. dark brown streak along side of snout and along postocular, also extends back along and above median trunk ridge or keel where expanded and embracing most of side of tail. On upper side of trunk, close below upper trunk keel another narrower dark brown streak, finally merging in dark brown of side of tail. Iris gray.

East Indies, Philippines, Melanesia, Polynesia.

One example. Balamban, Cebu. April 2, 1908. Length 47 mm.

One example. Batangas, Luzon. June 7, 1908. Length 57 mm.

Four examples. Cabugao River, Catanduanes Island, Luzon. June 9, 1909. Length 107 to 110 mm.

Two examples. Cahuagan River, three miles from mouth near Paluan Bay, Mindoro. December 1908. Length 56 to 58 mm.

One example. Camp Overton, Mindanao. August 15, 1908. ~~August 15, 1907.~~ Length 57 mm.

One example. Malamboang Anchorage. May 21, 1908. Length 53 mm.

D. 5177. Escarceo Light, S. 53° E., 5.80 miles (lat. 13° 35' N., long. 120° 54' 36" E.), Verde Island Passage. March 24, 1908. Length 50 mm.

Two examples.

>

One example. Hanjan River, Mindoro. June 5, 1908. Length 80 mm.

Four examples. Panabutan Bay, Mindanao. February 5, 1908. Length 56 to 60 mm.

One example. Port Dupon, Leyte. May 6, 1908. Length 50 mm.

Two examples. Taal Anchorage. February 20, 1909. Length 55 & 58 mm.

One example. Varadero Bay. October 27, 1909. Length 69 mm.

Dorypichthys insularis Hora

Dorypichthys insularis Hora, Rec. Indian Mus., vol. 27, p. 38, pl. 2, fig. 1, 1925 (type locality, Birchgunge, South Andamans); vol. 27, pt. 6, December 1925 p. 467, 1 (Birchgunge, South Andamans; Corbyn's Cove, North (South) Andamans).

Depth equals head without snout; head 8 2/5 to 9. Snout less than rest of head, with 8 longitudinal keels; eye 6 2/5 in head; nuchal keel runs to mid-dorsal surface of head, from behind eyes far back as pectorals; opercle with complete longitudinal rectilinear keel and 1 or 2 shorter, close below.

Analysis of the species

a'. White transverse collar at nape; black saddle on upper surface of caudal peduncle. spilurus.

a². No white transverse collar at nape; no black saddle on upper surface of caudal peduncle. forsteri.

. Rings 18 + 31; finely striated transversely, edges minutely serrated, smooth in young. Lower trunk and caudal keels discontinuous; median trunk and lower caudal keel continuous; upper trunk keel reaches end of dorsal, where upper caudal keel continued forward to commencement of dorsal.

D. 34 or 35, on 1 trunk and 7 caudal rings; A. ray + 3; caudal 9; pectoral 18.

Young gray white, mottled with black on sides of tail and trunk, anteriorly on latter markings more regular and dark irregular band above middle line with series of more or less well defined white spots below. Dark band continued

as more definite streaks on postorbital. Snout mottled. In adult all markings more definite. Dorsal surface yellowish white, with numerous black dots, ventral surface paler but also with black dots. Sometimes series of round black spots in mid line of front part of body. Fins gray white. Length 97 mm. (Annandale and Hora.)

Andamans.

Doryichthys deokhatoides (Bleeker)

Syngnathus deokhatoides Bleeker, Verh. Batavia. Genoot. (Trork.), vol. 25, p. 17, 1853 (type locality, Palembang; Pontianak); Natuurk. Tijds. Ned. Indië, vol. 5, p. 429, 1853 (Pontianak, Borneo); vol. 7, p. 106, 1854 (Palembang; Pontianak); Act. Soc. Sci. Ind. Néerl., vol. 3, no. 9, p. 7, 1857-58 (Palembang, Sumatra).

Microphis deokhatoides Duméril, Hist. Nat. Poiss., vol. 2, p. 596, 1870 (compiled).

The excellent figure by Günther agrees with my adult specimens in the extremely long dorsal and anal filaments. These include the third, fourth and fifth rays of the dorsal and the third of the anal. The former and sometimes the latter but little less than the total body length. In the smallest examples the longest dorsal rays seldom extend beyond the tip of the caudal and the anal not beyond the caudal base. Great variation is, however, manifest in the blue longitudinal lines, which are not alike in any two individuals, or even alike on both sides of the body. Moreover there is sometimes no black saddle on the upper surface of the caudal peduncle behind the soft dorsal, this being replaced simply by a whitish blotch not larger than eye.

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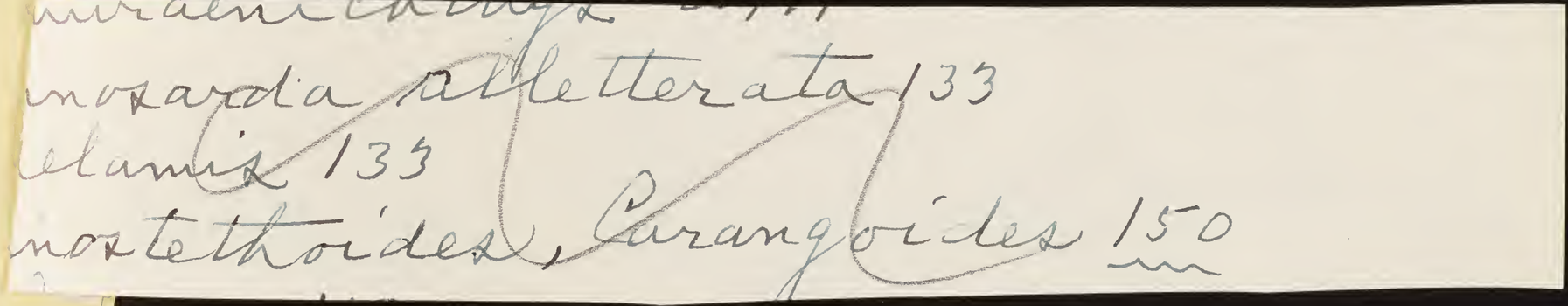
Dorychthys deokhatoides Bleeker, Act. Soc. Ind. Néerl., vol. 8 (Sumatra), p. 72, 1859 (Sumatra; — Károli, Termesz. Füzetek, Budapest, vol. 2, p. 40, 1878.

Dorychthys ~~deokhatoides~~ *fluviatilis* (not Bleeker) Duncker, Mitteil. Naturh. Inst. Hamburg, vol. 21, p. 188, pl. 2, figs. 10-a, 1903 (1904) (Kuala Lumpur; Juan River).

Dorychthys deokhatoides Bleeker, Act. Soc. Ind. Néerl., vol. 8 (Sumatra), p. 72, 1859 (Sumatra; Borneo). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 180, 1870 (Sarawak; type). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 53, 1914 (1915) (Selangor). — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 53, 1922 (Medan, Sumatra).

Dorychthys fluviatilis (not Bleeker) Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 21, p. 188, pl. 2, figs. 10-a, 1903 (1904) (Kuala Lumpur; Muar River).



D. X, 0 to II, 14, I to 16, I, fifth spine 3 to 4 in total head length, sixth ray in adult 1 4/5, fifth ray in young 2 1/5 in total head and body length to caudal base; D. III, 0 or I, 8, I to 10, I, third spine 3 1/8 to 4 1/3 in total head length, fourth ray 1 2/5 to 1 1/2; least depth of caudal peduncle 2 1/6 to 2 1/2; caudal 1 to 1 1/3, emarginate; pectoral 1 to 1 1/2; ventral 1 1/3 to 1 3/5.

Back very pale brown, sides and below buff to whitish. About 17 longitudinal gray bands, on back rather narrow and on sides much wider; also variable in detail, often broken in places. With age 4 on cheek above maxillary. Iris brown. Fins all brown, uniform! Broad buff white band connects eyes.

Palau Islands, China, Philippines.

Depth 16 to 20; head $5\frac{1}{2}$ to $6\frac{1}{2}$. Snout twice postorbital or equals space between front eye edge and pectoral base; eye $6\frac{1}{2}$ to 7 in head, 4 in snout; opercle with prominent, complete, longitudinal keel, without radiating ridges.

Rings 17 to 20 + 31 to 35; transversely striated, edges finely serrated in young, smooth with age; intermedial shields smooth. Lower trunk and caudal keels continuous; median trunk and upper caudal keels subcontinuous, former reaches last trunk or first caudal ring; ventral trunk keel very prominent. Tail with caudal somewhat longer than trunk and head.

D. 30 to 35, on 1 or 2 trunk and 4 to 6 caudal rings; A. rays

Head 5½ to 6.

3 or 4; caudal 8 to 10; pectoral 18 to 23.

Greenish, ventrally darker. Laterally on trunk at limits of sixth to 14th ring in upper heel-dark patch. Narrow dark band on snout through eye to hind border of opercle. Length 175 mm. (Weber and Beaufort.)

Malaya, East Indies.

Dorypichthys martensii (Peters)

Syngnathus martensii Peters, Monatsb. Akad. Wiss. Berlin, p. 459, 1869 (type locality, Pulo-Matjan, Borneo). — Duméril, Hist. Nat. Poiss., vol. 2, p. 560, 1870 (compiled). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 175, 1870 (compiled).

Doryichthys martensi Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 53, 1914 (1915) (type). — Weber and Beaufort, Fish. Indo-Austral. Archip., vol. 4, p. 54, 1922 (Kapuas affluent, Mandai River, upper Kahalaban, Borneo).

Genus Symphorus Günther

Case 30

Symphorus Günther, Ann. Mag. Nat. Hist., series 4, vol. 4, 1872, p. 438. Type Symphorus taeniolatus Günther, monotypic.

Maxillary teeth in several rows, anterior partly canine like. Preopercle edge denticulate. Pseudobranchiae well developed. Branchiostegals 7. Scales of trunk ctenoid, in 55 rows. Head and opercles all scaled, 5 to 10 rows on cheek, preopercle flange naked. Dorsal and anal scaleless, rays acutely produced, spinous finger-like. Dorsal spines 10, rays 16 or 17. Anal spines 3, rays 9 to 11.

Large, brilliant sparoids of the western Pacific, with soft dorsal and anal rays produced.

11666

Doryichthys ignoratus Vaillant,
Nouv. Arch. Mus. Hist. Nat. Paris,
ser. 3, vol. 5, p. 62, 1893 (type locality,
mouth of Raden, Manetdi River,
Borneo).
Microphis ignoratus Vaillant, Notes
Leyden Mus., vol. 24, p. 40, figs. 1-2,
1902 (types).

? Microphis caudatus (not Peters)
Vaillant, Nouv. Arch. Mus. Hist. Nat.
Paris, ser. 3, vol. 5, p. 62, 1893.
(Sebroang, Borneo).

with band of cardiform teeth behind; dorsal spines 10 or 11.

V. Pondylioma.

m.[2] Cheeks naked, opercle scaly, dorsal spines 10. Gymnocrotaphus.

Cancel 3 named only

Head 7 or more. Snout equals rest of head; eye 4½; median snout keel reaches nostrils or occiput; opercle vaulted, with complete longitudinal keel, with more or less divergent pronounced corrugated lines.

Rings 15 to 17 + 33 to 37; transversely striated or corrugated, keels smooth. Lower trunks and caudal keels continuous; median trunks and upper caudal keels subcontinuous, both incompletely or completely interrupted. subdorsally on last trunks or first caudal ring; eventually median trunks keels deflected to lower caudal keel but not continuous. Tail longer than trunks and head.

D. 31 to 36, on 1 or 2 trunks and 5 to 7 caudal rings; A. rays 3 or 4; caudal 9; pectoral 16 to 20.

Reddish brown, laterally on limit of fourth to penultimate ring of trunk black spot on median keel. Length 125 mm.
(Weber and Beaufort.)

Malaya, East Indies.

11662

Doryichthys ocellatus Duncker

Doryichthys ocellatus Duncker,
Spol. Zeylan., vol. 7, p. 28, pl. , fig.
(a., 1910 (type locality, ~~Colombo~~, Ceylon);
Kalu-ganga, near
Galatura tea-estate, 32
miles up river; Mahaweli-
ganga, below Thalawai
estate, near Trincomalee;
Yeinganga at Wakwella,
Hamburg,
(type).
luganga;
;
snout
4, $2\frac{3}{4}$ in
snout; opercle with straight
keel, beneath and parallel rarely
2 weaker ones, most distinct on
hind half of opercle.

Rings 15 or 16 + 31 or 32,
lower ~~lateral~~ trunks and caudal
keels discontinuous; median
lateral trunks keel continuous
with lower caudal keel; ventral

1166e

Doryichthys ocellatus Duncker

Doryichthys ocellatus Duncker, Spol. Zeylan., vol. 7, p. 28, pl. , fig. , A., 1910 (type locality, ~~Colombo~~, Ceylon); Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 51, 1914 ('1915) (type); vol. 29, p. 269, 1911 (Kaluganga; Valvella, Trincomali);

Depth 21; head 8 1/4. Snout 2 1/3 in head; eye 5 3/4, 2 3/4 in snout; opercle with straight keel, beneath and parallel rarely 2 weaker ones, most distinct on hind half of opercle.

Rings 15 or 16 + 31 or 32; lower ~~lateral~~ trunks and caudal keels discontinuous; median lateral trunks keel continuous with lower caudal keel; ventral

(Linné
Nyst. rat., Ed. 12,

r, Prot. Acad.
6, Pl. 10, Fig. 1.
er].

(A. III, 12, I;
I=) of lateral wire,
base, 3 scales
3 predorsal
; eye 5 1/5; max-
. Head width

(L., ... Amer. Naturk. Hum. ...
Artiel. Naturk. Hum. ...
vol. 32, p. 51, 1914 (1915)
vol. 29, p. 269, 1911 (Kal...
Valsella, Triconnale...

depth 21; head 8 1/4.
2 1/3 in head; eye 5 3/4
snout; opercle with

not canine like; body more oblong or elongate. Pagellus.

f.[2] 2nd front teeth incisors, none canines.

m.[1] Snout obtuse; incisors broad; molars 2 to 4 series. Diplodus.

m.[2] Snout pointed; incisors narrow, produced; hind teeth very small and uniserial. Puntazzo.

a.[3] Scatharinal. Fixed incisors in front of jaws only; no molars, nor teeth on palate; herbivorous.

n.[1] Cheeks scaled.

o.[1] Incisors broad, notched at tip, uniserial, without cardiform teeth behind.

fa.[1] Body elongate, subcylindrical; dorsal spines 14 or 15. Boops.

fa.[2] Body oblong, compressed; dorsal spines 11. Sarpa.

o.[2] Incisors narrow, lanceolate,

Could round obs

edge very prominent in female. Rings of adults smooth, spiny behind in young. Brood organ from second body ring to first caudal ring, with large, completely closing but not coalescent protective plates. No cutaneous folds. Eggs large, in 4 longitudinal and 30 transverse rows.

D. 37 to 40, on 1 or 2 trunk and 7 or 8 caudal rings; A. rays 4; caudal 9, small; pectoral 17 to 19.

On middle lateral edges of trunk, on each borders of its rings, 1 black white bordered ocellated spot, white contour fading in spirit. Back light reddish brown, sides yellow gray, protective plates of brood

Cur 129

Gurella elevata Macleay

Gurella elevata Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 408. Port Jackson. 1/24 Waite, Mem. New South Wales Natural. Club, No. 2, 1904, p. 26. 1/24 Stead, Edible Fishes New South Wales, 1908, p. 51, pl. 20. 1/24 Roughley, Fishes of Australia, 1916, p. 56, pl. 14 (New South Wales). 1/24 McCulloch, Records Australian Mus., vol. 13, No. 2, July 20, 1920, p. 64, pl. 13, fig. 1 (Maroubra and Terrigal); Fishes of New South Wales, 1927, p. 62.

Depth 2 2/5; head 3 2/3. Snout 3 in head; eye 4, 1 2/3 in snout; jaws even; maxillary nearly reaches eye, length 3 1/8 in head; outer teeth uniserial, edges strongly tricuspid; inner teeth minute, in broad band; interorbital 3, convex; preopercle

pouch darker. Dark longitudinal
strip on each side from
snout tip through eye to opercle,
behind which, more or less
distinct, passes on to trunk
between upper and middle
lateral edge. Caudal with
yellow dorsal and ventral
edges. Iris yellowish red.
Length 101 mm. (Duncker.)

Ceylon.

71508 U.S.N.M. Akune, Satsuma, Japan. Bureau of Fisheries. Length 61 to 75 mm. 2 examples.

76272 U.S.N.M. Yokohama, Japan. P. L. Jouy. Length 150 mm.

1166h

Dorycichthys caudocarinatus Weber

Dorycichthys caudocarinatus Weber, ~~Siboga Expd., Fische~~ Nova Guinea, vol. 5, pt. 2, p. 229, 1908 (type locality, Tawarin River, New Guinea). — Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 51, 1914 (1915) (compiled). — Fowler, Mem. Bishop Mus., vol. 10, p. 412, 1928 (compiled).

— Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 51, 1922 (type).

Head 7 (with caudal); body slender, nearly quadrilateral. Snout slightly longer than postorbital, somewhat concave, with median keel reaching front of eyes and lateral keel

Depth little more than head, or 3.
Eye 5 in head, close below upper profile,
rather nearer snout end than opercle
end; mouth cleft moderate, rather oblique,
jaws nearly equal; maxillary reaches
somewhat beyond front eye edge;
interorbital not much more than eye.
Scales 55 in lateral line, 9 above, 20
below. Cheek scales small, in 10 rows.
D. X, 16, continuous, spines short
and rather feeble, third to ninth
subequal or 1/4 of head, tenth conspicuously
larger and attached to first ray;
soft dorsal elevated, third to sixth rays
produced in long thin filaments; A.
III, 9, spines feeble, third nearly three
second, rays long, especially third,
which produced as filament, caudal
emarginate; pectoral reaches vent,
fifth upper ray longest; ventrals not

reaching level of hind pupil edge, below posterior end curved edge to necks; eye 6 1/2 in head, 3 3/4 in snout; occiput with median keel; opercle with complete longitudinal keel, below 5 radiating finely serrated ridges.

Rings 20+28; transversely striated, keels finely serrated; all intermedial shields of tail with feeble, narrow, longitudinal keels. Lower trunk and ~~tail~~ caudal keels discontinuous; median trunk and lower caudal keels continuous; upper caudal keel begins below dorsal origin. Tail slightly shorter than trunk and head.

D. 42, on 2 trunk and 8 caudal rings, lower than body depth; A. rays 3; caudal 9, rounded,

long as postorbital; pectoral rays 18 or 19.

Brownish, with dark hue, especially on tail below and caudal. Length 72 mm.

(Weber and Beaufort.)

New Guinea. One specimen known.

1166b

Dorypichthys cuncalus (Buchanan-Hamilton)

Syngnathus cuncalus Buchanan-Hamilton, Fishes of Ganges, pl. 12, 362, 1822 (type locality, Ganges estuaries near Calcutta). — Bleeker, Verh. Batavia. Genoot. (Nal. Jchth. Bengal), vol. 25, p. (80) 162, 1853 (Calcutta); vol. 26, pl. 3, fig. 4, 1857. Archiv Naturges., 1853, pt. 1, p. 234 (reference).

Microphis cuncalus Kaup, Cat. Lophobr. Fish Brit. Mus., p. 64, 1856 (Malabar). — Day, Fishes of Malabar, p. 266, 1865. — Duméril, Hist. Nat. Poiss., vol. 2, p. 591, 1870 (Malabar).

Symphorus forsteri (Schneider)

Sparus forsteri Schneider, Syst. Ichth. Bloch, 1801, p. 282. Tongatabu.

Chrysophrys forsteri Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 140 (Tongatabu).

Symphorus forsteri Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 220 (on Günther).

Sparus striatus (Forster) Schneider, Syst. Ichth. Bloch, 1801, p. 282 (name in text).

1/m Lichtenstein, Descript. Animal., Forster, 1844, p. 184 (name type).

Symphorus taeniolatus Günther, Ann. Mag. Nat. Hist., series 4, vol. 9, 1872, p. 439. Macassar, Celebes. 1/m Bleeker, Natuur. Ind. Archipel., vol. 8, 1876-77, p. 97 (copied Günther).

Symphorus taeniotatus Meyer, Tm. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 15 (North Celebes) (error).

1166 l

Dorypichthys cuncalus (Günther,
Cat. Fish. Brit. Mus., vol. 8, p. 181,
1870 (Bengal). — Day, Fishes of
India, pt. 2, p. 679, pl. 174, fig. 4,
1878 (Bengal; Orissa); Fauna
British India, Fishes, vol. 2, p.
465, fig. 166, 1889 (Indian
Peninsula). — Duncker, Ichthyologische Ergebnisse
Zeylon., vol. 7, p. 27, 1910; Mitteil.
Zoolog. Mus. Hamburg, vol. 29, p.
269, 1911 (Tamadhura River); vol.
32, p. 52, 1914 (1915) (British India,
Malabar, Ceylon, Bengal).

Typhlus dussumieri (Bibron) Kaup,
~~Cat. Lophobr. Fish Brit. Mus., p. 64,~~
Archiv Naturges., 1853, pt. 1, p. 234,
~~1856~~, (name in synonymy).

gill opening to its opposite. Upper tip of pectoral orange. First dorsal clear olive yellow. Second dorsal clear lemon, becomes brighter terminally. Caudal like second dorsal, edges and tip in fork somewhat shaded with orange, upper edge dusky. Anal pale orange below, shading to lemon yellow posteriorly. Pectorals hyaline yellow with dusky orange bar at base. Ventrals pale orange. Iris yellow.

A852. Galeta Island. November 9, 1909. Length 222 mm.

The following without black saddle on caudal peduncle above.

A679. Bum Bum Island. September 25, 1907. Length 323 mm.

5335. Colon market. April 4, 1908. Length 320 mm.

166mm

Trunk and head 2 in total length; head 4 1/2 in combined head and trunk. Eye moderate, median in head, 3 in snout; fin ridge along upper surface of somewhat elevated snout; elevated ridge divides opercle in 2 halves.

Rings 17 or 18 + 25 to 27, edges of rings without spines. Median lateral keel uninterrupted, unites to form arch with lower keel of first caudal ring.

D. 50, on 2 body rings and 9 caudal rings; A. 2, caudal rays 8 or 9; pectoral 16 to 18.

Green above, dirty white below. On back several dusky lines intersect each other, forming net work. Along either side longitudinal spotted stripe. Eye silvery. Opercle burnished silvery. Caudal reddish. Length 178 mm.

(Day).

Tidal rivers and above, India.

1166 m

Doryichthys spinachioides Duncker

Doryichthys spinachioides Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 15, pl. 2, fig. 2, 1925 (types). — Fowler, Mem. Bishop Mus., vol. 10, p. 112, 1928 (compiled).

— Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 50, 1922 (compiled).

Snout robust, somewhat shorter than postorbital; opercle with complete finely serrated longitudinal keel and fine smooth radiating ridges below, uppermost most prominent and nearly parallel with principal keel.

1166m

Doryichthys spinachioides Duncker

Doryichthys spinachioides Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 32, p. 52, 1915 (type locality, Kaiserin Augusta River, New Guinea). — Duncker and Mohr, Mitteil. Naturh. Mus. Hamburg, vol. 41, p. 15, pl. 2, fig. 2, 1925 (types). — Fowler, Mem. Bishop Mus., vol. 10, p. 112, 1928 (compiled).

Snout robust, somewhat shorter than postorbital; opercle with complete finely serrated longitudinal keel and fine smooth radiating ridges below, uppermost most prominent and nearly parallel with principal keel.

asciata 48

asciolatus 61

60

third ray 2 2/5; A. III, 8, I, third spine 3, first ray 2 7/8; caudal 1 2/5, truncate; least depth of caudal peduncle 2 7/8; pectoral 1 1/5; ventral 1 7/8.

Light blue, with silvery reflections. Black spot on temple. Upper lip yellow. Ends of fins golden.

(Vaillant.)

Seychelles. The types, obtained by Dussumier, were nearly 305 mm. long.

Rings 16+27; edges smooth, finely serrated on head. Neural keel reaches first dorsal intermedial shield, other intermedials without keel.

D. 66, on 6 trunk and 6 caudal rings; A. rays 4; caudal 9; pectoral 19.

Gray above, silvery white below. Trunks laterally with diffuse dark band. Opercle silvery. Length 82 mm.

(Weber and Beaufort.)

New Guinea.